

**U.S. Department of the Interior  
Bureau of Land Management**

**Draft Standards Determination Document  
Pilot Grazing Allotment  
2014**



**Location: Elko County, Nevada**

**PREPARING OFFICE**

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Cover photo: Pilot Peak by Bruce Thompson, Wild Horse Specialist

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## **DRAFT STANDARDS DETERMINATION DOCUMENT** **Pilot Grazing Allotment**

### **Introduction**

The Standards and Guidelines for Nevada's Northeastern Great Basin Area were developed by the Northeastern Great Basin Area Resource Advisory Council (RAC) and approved in 1997. Standards and guidelines are likened to objectives for healthy watersheds, healthy native plant communities. Standards are expressions of physical and biological conditions required for sustaining rangelands for multiple uses. Guidelines point to management actions related to livestock grazing for achieving the standards. This Standards Determination Document evaluates and assesses livestock grazing management achievement of the Standards and conformance with the Guidelines for the Nevada's Northeastern Great Basin Area for the Pilot Allotment in the Elko District. This document does not evaluate or assess achievement of the Wild Horse and Burro Standard or conformance to its respective Guidelines as there are no Herd Management Areas within the allotment.

### **SUMMARY FINDINGS**

<b>Standard</b>	<b>Resource</b>	<b>Attainment of the Standard</b>	<b>Livestock Use in Conformance with the Guidelines</b>
Standard 1	Upland Sites	MET	Yes
Standard 2	Riparian & Wetland Sites	MET for all but two sites. One site not met due to presence of invasive plants but not due to livestock use	Yes generally although inconclusive at one spring site
Standard 3	Habitat	NOT MET due to less than desirable amounts of grasses and forbs, and invasion of cheatgrass and trees, but not due to livestock use	Yes
Standard 4	Cultural Resources	MET	Yes

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## Allotment Description and Background Information

The Pilot Allotment is entirely located in eastern Elko County, Nevada, immediately northwest of the town of West Wendover, Nevada. The allotment is bordered by the Pilot Valley Allotment to the north, the Utah Stateline on the east, by Interstate Highway 80 to the south and the crest of the Toano Range on the west (See Figure 1). The topography varies from the rugged rock buttes and steep canyons of Pilot Peak in the east to centrally located lowland desert playas. The western edge sports grass/shrub benches rising to the rocky pinyon/juniper clad ridges of the Toano Range. The elevation of the allotment ranges from 4,261 feet on the alkali flat to the east of Pilot Peak and 4,309 feet in Pilot Creek Valley to 8,037 feet in the Toano Range to 10,716 feet at the top of Pilot Peak. As topography varies, so does climate. The 30-year crop-year (September-June) precipitation median for the alkali flat east of Pilot Peak is less than 5 inches. At the top of Pilot Peak, median crop-year precipitation falls just short of 30 inches (PRISM Climate Group 2014).

There is one pasture fence located within the allotment. The fence is located on the western portion of the allotment and encloses the Pilot Fenced Federal Range (FFR) Pasture (Figure 2).

Two notable wildland fires have occurred within the Pilot Allotment since 1999. These fires have resulted in only minor adjustments to grazing management within the affected areas of the allotment. In 1999, the Silver Fire burned 1,108 acres and in 2006, the Pilot Fire burned 2,761 acres of which approximately 365 acres were located in Nevada. This fire impacted the Bettridge and Morrison (Donner) Creeks. The Silver Fire required some riding by the permittee to keep livestock off the burn. The Pilot Fire burned in an area that is not accessible by cattle in the Pilot Allotment. Figure 3 shows fires that have occurred around the Pilot Allotment since 1984.

The eastern portion of the Toano Herd Area (HA) lies in the far western portion of the Pilot Allotment. Through the Wells Resource Management Plan – Approved Wild Horse Amendment and Decision Record of August 2, 1993, it was determined that due to the checkerboard land status, maintaining the Toano Herd Area presented management conflicts and would be managed as a “horse-free” area. Wild horses in the Toano Herd Area (HA) were removed in October, 1993. Inventory flights and field checks following the gather determined that the area was horse-free. Several years later, domestic horses were turned out or abandoned in the allotment and began to multiply. In 2010, 149 estray horses were impounded from Pilot Valley in the Pilot Allotment. There is currently an estimated 50-60 head of estray feral horses in the Pilot Valley or Pilot Peak areas. While it is not unusual to see the estray feral horses near the key areas they are mainly found along the upper benches of Pilot Peak.

The Pilot Allotment has large areas of salt desert shrub communities which occupy the mid to lower fans and are the areas principally grazed by authorized livestock (cattle). There are also areas of greasewood along the valley bottoms, black sagebrush stands in the high hill areas and pinyon/juniper and forest lands in the higher elevations of the Toanos and Pilot Peak. Wyoming big sagebrush is prominent in the Toano area and mountain big sagebrush is up on Pilot Peak. These vegetation types provide habitat for approximately 100 bird species, 70 mammal species,

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and several reptile and amphibian species that potentially inhabit similar habitats throughout northern Nevada.

Pinion and juniper forests are scattered throughout the Toano Range, and salt shrublands dominate the eastern boundary of the allotment adjacent to the Utah border. Other species that occur in the higher elevations of the Toano and Pilot Peak ranges include mountain mahogany, white fir, limber pine, quaking aspen, bristlecone pine, and Engelmann spruce. Cottonwood, quaking aspen, alder, willow, and chokecherry can be found in areas of higher moisture content such as seeps, springs and streams. A general view of vegetation communities is shown on Figure 10.

The Pilot Allotment provides habitat for big game, including elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*) and bighorn sheep (*Ovis canadensis nelsoni*). Additional common animals include coyote (*Canis latrans*), rabbits (*Lepus* spp. and *Sylvilagus* spp.), badger (*Taxidea taxus*), bobcat (*Lynx rufus*), grey and red fox (*Urocyon cinereoargenteus* and *Vulpes vulpes*), sagebrush obligate birds such as sage sparrow (*Amphispiza belli*), and other small mammals, reptiles, and invertebrates. Greater sage-grouse (*Centrocercus urophasianus*), a Candidate for listing as Threatened or Endangered under the Endangered Species Act, have not been documented to occur within the allotment. However, 692 acres of Preliminary Priority Habitat (primarily along Pilot Creek) and 27,777 acres of Preliminary General Habitat (PGH) have been designated within the allotment (Figure 4). The nearest active leks occur approximately 10 miles north and west of the allotment boundary.

A summary of the public and private acres is summarized in Table 1 and is shown on Figure 2.

**Table 1.** Public and private acres.

Allotment Name	Public Acres	Private	Total
Pilot	101,121	54,969	156,090

**Table 2.** Summary of animal unit months (AUMs), season of use, and kind of livestock as outlined in the 1986 Wells Resource Management Plan (RMP) and the 1998 Pilot Final Multiple Use Decision (FMUD).

Allotment Name	Pasture	Grazing Preference (AUMs)	Season of Use	Kind of Livestock
Pilot		4,324	11/15 – 4/15	Cattle
	FFR	106	3/1 – 2/28	Cattle
<b>Total</b>		<b>4,430</b>	<b>n/a</b>	

Historically large numbers of sheep grazed in the winterfat and black sage areas in Pilot Creek Valley. In the early 1900's, in order to keep competition from its winter ranges (Pilot Creek Valley), Utah Construction ran nearly 40,000 head of sheep on the winter range as described in the book "Cattle in the Desert" by Young and Sparks (1985). Voluntary and gradual reduction in sheep numbers by sheep operators began in the 1960's and reduced competition for forage between domestic sheep, pronghorn and other native wildlife. In 1983, the Pilot Allotment underwent a change in kind of livestock from sheep to cattle. Current sheep use is restricted to

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trailing (from Utah into Nevada and back into Utah) along the county road in the extreme eastern portion of the allotment.

An allotment evaluation was completed on July 16, 1997 and management action selection report (MASR) issued on March 30, 1998. The Pilot Allotment Final Multiple Use Decision (FMUD) was issued on June 18, 1998. Based on the allotment evaluation and MASR, the FMUD determined that the standards for rangeland health were not being met; however, progress was being made toward attainment.

The 1997 Evaluation of the Upland Site Standard 1 showed that ecological conditions at the two upland key areas remained in satisfactory condition (late seral) with stable to improving trends for the key forage species (Indian ricegrass and winterfat); however, utilization of the key forage species exceeded the utilization objectives at times. Excessive utilization of key forage species on about 40 – 45% of the grazing area (based on use pattern maps), particularly in the valley portions during the winters of 1987/88 and 1989/90, resulted in the determination the upland site standard had not been met. During this time, precipitation levels tended to be below normal with the livestock permittee initiating significant reductions in livestock numbers. Between 1991 and the end of the evaluation period in 1995, key area utilization and use pattern levels generally dropped to acceptable levels and tended to be in the slight to moderate use categories which indicated that progress was being made towards attainment of the upland standard. During this latter part of the evaluation period, precipitation levels tended to improve along with reduced livestock numbers. Following the 1994/1995 winter grazing period, use pattern observations showed that use was more widely dispersed due to an extremely wet winter which allowed the cattle to obtain water in areas other than the traditional water sources. The May 15, 1998 FMUD proposed development of a well on the west bench of the Leppy Hills area (southeast part of the Pilot Allotment), which is an area traditionally receiving slight to light use, in order to improve cattle distribution and relieve pressure on the higher use areas in the central part of the allotment. The proposed well has not been developed because an acceptable site for the well has not been identified.

Based on the 1997 allotment evaluation and MASR issued on March 30, 1998, the FMUD determined that Standard 2 (Riparian and Wetland Sites) was being met for most of the streams/creeks (lotic areas) with the exception of Pilot Creek, and that it was not being met for some of the springs (lentic areas) in the allotment. The proposed well in the Leppy Hills area, described above, was expected to lessen cattle impacts in higher use areas such as Pilot Creek and at other springs. In addition, the 1998 FMUD proposed to improve, enhance or develop at least two springs (inferring those springs could be fenced with possibly water from the springs provided outside the fence), with additional springs to be inventoried and possibly developed as needs were determined and funding became available. In 1999, Little Salt Spring located in the valley area commonly grazed by cattle was fenced to improve the riparian habitat. Since that time, no additional springs have been identified as needing to be fenced.

Standard 3 (Habitat) was also not being met in the Pilot Allotment; however, progress was being made towards attainment of the Habitat standard. The 1997 evaluation stated that although mule deer habitat remained in good condition, the most limiting factor on mule deer winter range was the unsatisfactory age structure of bitterbrush (not enough young plants) which was at least

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partially attributed to the prolonged effects of drought. The mule deer habitat study site is located in an area that receives little to no use by livestock. Regarding elk, no habitat condition studies were available at that time; however, elk utilization of forage bunchgrasses was within acceptable levels. At the time of the 1997 evaluation, the Nevada Department of Wildlife had expanded antelope yearlong and summer range to include parts of the Pilot Allotment. The ratings for antelope habitat at the two range/big game study sites (PI-01 and PI-02) resulted in fair condition ratings. In 1987, bighorn sheep were reintroduced on Pilot Mountain, but data was not yet available on bighorn sheep habitat conditions for the 1997 evaluation.

Livestock grazing was determined to be one of the causal factors in the non-attainment of the Habitat Standard due to utilization exceeding objectives on antelope range during the first half of the evaluation period, with progress being made towards the Habitat Standard as utilization levels lessened during the last half of the evaluation period. By 1995, increases in Indian ricegrass at both key areas as well as notable increases in winterfat and bud sagebrush at Key Area PI-01, along with a significant increase in shadscale at Key Area PI-02, also indicated improvements in antelope habitat conditions and thus progress towards the Habitat Standard. These increases in desirable forage species were observed in 1995 at the end of the evaluation period during a time when precipitation levels had increased and when an abundance of young plants were observed. Retention of the young desirable plants in the plant communities over the long-term, particularly through drought years, would be evaluated in future assessments.

On June 18, 1998, the Elko Field Office issued a Final Multiple Use Decision (FMUD) for the Pilot Allotment to implement certain management actions. (The FMUD is available for review at the Elko District Office). The following is a summary of the management actions that were to be implemented, along with the status on implementation of those actions.

1. Establish the total number of AUMs of specified livestock grazing for the Pilot Allotment as follows:

The allowable use in the Pilot Allotment will remain unchanged at 4,430 AUMs and with the season of use remaining from 11/15 through 4/15 annually.

This action required no changes to livestock grazing permitted use and is displayed on the current livestock grazing permit.

2. The terms and conditions on the term grazing permit will be as follows:
  - a. Authorized grazing use will be in accordance with the Pilot Allotment Multiple Use Decision dated June 18, 1998.
  - b. An actual use report showing use by pasture will be turned in within 15 days after completing annual use.
  - c. All range improvements will be maintained/repared prior to livestock turn out.
  - d. Supplemental feeding is limited to salt, mineral and/or protein supplements in block, granular or liquid form. Such supplements will be placed at least ¼ mile from live waters (springs, streams, and troughs), wet or dry meadows, and aspen stands.



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- e. All riparian exclosures, including spring development exclosures, are closed to livestock use unless specifically authorized in writing by the Assistant District Manager for Renewable Resources.
- f. Pursuant 43 CFR 10.4(g) the holder of this authorization must notify the authorized officer, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the immediate vicinity of the discovery and protect it from your activities for 30 days or until notified to proceed by the authorized officer.

In addition to clarifying that livestock use was to be consistent with the June 18, 1998 FMUD, the remaining terms and conditions were standard requirements that remained unchanged from previous grazing licenses/permits and are included on the livestock grazing permit.

### 3. Flexibility

- a. The numbers of livestock to be grazed will remain flexible according to the needs of the permittee. The livestock numbers specified on the grazing permit are based on the maximum period of use and number of AUMs of authorized grazing for the Pilot Allotment. Livestock numbers and periods of use will be applied for on an annual basis.
- b. Deviations from the terms and conditions will be allowed to meet the needs of the resources and the permittee as long as these deviations are consistent with multiple use objectives and standards for rangeland health. Deviations, including any changes in licensed use or adjustments in the terms and conditions will require written application and written authorization from the Assistant District Manager for Renewable Resources prior to grazing use.

This wording on Flexibility is included on the livestock grazing permit.

- 4. Improve, enhance or develop at least two springs in the Pilot Allotment. Additional springs will be inventoried and developed as needs are determined and funding becomes available.
- 5. Modify and/or requantify the allotment specific and key area objectives for the Pilot Allotment to read as described in Appendix A. The general LUP (Land Use Plan) objectives and the standards for rangeland health remain unchanged.

The general LUP objectives can be found in Appendix 1 below. The allotment specific and key area objectives described in Appendix A of the FMUD included the following:



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- a. Manage livestock grazing on native rangelands in the Pilot Allotment so as not to exceed utilization objectives for key species as measured at key area monitoring locations as follows:

Key Area	Maximum Use %
PI-01	Indian ricegrass – 60% Winterfat (White sage) – 50%
PI-02	Indian ricegrass – 60% Winterfat (White sage) – 50%

- b. Achieve a desired plant community as measured at selected key area monitoring sites by the year 2008 as outlined below:

Desired Plant Community Objectives	
Key Area	Desired Plant Community
PI-01 Course silty 6-8" 028BY084NV	Maintain or increase perennial grass composition from 20% to 30% or more** Maintain or increase forb composition from 3% or more** Maintain the percent composition of shrubs 65% to 77% **
PI-02 Course gravelly loam 6-8" 028BY075NV	Maintain or increase perennial grass composition at 30% or more** Maintain or increase forb composition from 3% or more** Maintain the percent composition of shrubs 45% to 55% **
<p>The Soil Conservation Service Nevada Range Site Description (course silty 6-8" 028BY084NV) for this range site (PI-01) list the potential vegetative composition as approximately 55% for perennial grasses, approximately 10% for perennial forbs, and approximately 35% for shrubs.</p> <p>The Soil Conservation Service Nevada Range Site Description (course gravelly loam 6-8" 028BY075NV) for this range site (PI-02) list the potential vegetative composition as approximately 50% for perennial grasses, approximately 5% for perennial forbs, and approximately 45% for shrubs.</p>	
** As measured by percent composition of dry weight	

When the desired plant community (DPC) objectives were established in 1997/98, the soil survey and ecological sites descriptions for the Pilot Allotment had not been published by the Natural Resources Conservation Service. Since that time, the soil survey and ecological site descriptions have been published which resulted in the ecological site descriptions changing from the 028B to 028A sites; however, the site descriptions for the key areas above are similar between 028B and 028A. The identification of the ecological sites for Key Areas PI-01 and PI-02 are discussed in the assessment of the Habitat Standard below. In addition, when the DPC objectives above were developed, the key area data indicated stable to improving trends in key forage species during an above normal precipitation cycle which followed a cycle of below median precipitation years.

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The expectation was that the improving trends at the time would result in long-term retentions of the increases in key forage species with the possibility of additional increases over time. However, since that time the vegetation communities have evolved through additional years where precipitation has varied between below normal and above normal levels, including variations in the amount and timing of precipitation events and related variations in temperature, resulting in vegetative compositions that have been more variable than expressed in the DPC objectives above. These variations are included in the assessment below.

- c. In the long term, provide forage to sustain the total number of AUMs of specified livestock grazing for the Pilot Allotment, consistent with other multiple use objectives.
- d. Improve and/or maintain riparian/stream habitat on 1.4 miles of Bettridge Creek and 0.3 miles on Morrison Creek to good or better condition (60% or more of habitat optimum) in the long term (by 2008).
- e. Improve, enhance or develop at least two springs in the Pilot Mountains.

There were also specific objectives applicable to Forest Management in the 1998 FMUD; however, they are not reiterated here as they are not being evaluated in this assessment.

6. The 1998 FMUD also included a Wild Horse and Burro Management Decision to reduce to and maintain wild horse numbers at zero within the Toano Herd Area (HA). This action was in conformance with the 1993 Wells Wild Horse RMP (Resource Management Plan) Amendment.

As explained in the Introduction above, the wild horses in this area were removed in October 1993.

In 1999 the BLM issued a decision modifying the season of use for the new FFR pasture and the percent public land in the Pilot Allotment. The decision modified the season of use in the new FFR pasture to 3/1 to 2/28 annually and changes the percent public lands in the Pilot Allotment from 50% to 56%.

## DRAFT DETERMINATIONS

### PART 1. Standard Achievement Review

#### Standard 1. Upland sites

*Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.*

#### As indicated by:

- Indicators are canopy and ground cover, including litter, live vegetation and rock,

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appropriate to the potential of the site.

## Guidelines:

- 1.1 Livestock grazing management is appropriate when in combination with other multiple uses they maintain or promote upland vegetation and other organisms and provide for infiltration and permeability rates, soil moisture storage, and soil stability appropriate to the ecological site within management units.
- 1.2 When livestock grazing management alone is not likely to restore areas of low infiltration or permeability, land management treatments should be designed and implemented where appropriate.
- 1.3 Livestock grazing management is adequate when significant progress is being made toward this standard.

The above indicator is appropriate to the potential of the ecological site.

## Determination:

X	Achieving the Standard
	Not Achieving the Standard, but making significant progress towards achieving
	Not Achieving the Standard, and not making significant progress toward standard

## Guidelines Conformance:

X	In conformance with the Guidelines
	Not in conformance with the Guidelines

## Conclusions:

### **This standard is being met.**

Current livestock grazing management practices are considered to be in conformance with the guidelines.

Salt Desert Shrub Communities - Based on observations regarding indicators of rangeland health related to soil infiltration and permeability rates, the frequencies of occurrence of plants (see Appendix 4), plant production and species composition (see Appendix 5), livestock periods of use and key forage plant utilization data (see Appendix 3), and knowledge of the weather patterns that affect the area, the key areas (PI-01 and PI-02) and areas represented by the key areas are healthy and indicate attainment of the upland site standard, and that livestock grazing is in conformance with the guidelines.

The salt desert shrub communities in the Pilot Allotment grow and develop/change within weather patterns that normally bring substantial stresses from high summer temperatures and inconsistent soil moisture levels due to swings in the annual amounts of precipitation received (see Appendix 2). These areas are also the principal areas grazed by the cattle during the fall/winter/early spring.

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Monitoring data and other observations in the Pilot Allotment show how the numbers of and/or production of individual plant species can vary between years while the assemblage of species maintains a healthy plant community. Even several years of use above the utilization objectives for Indian ricegrass and/or winterfat at Key Area PI-01 (Appendix 3) do not appear to have adversely affected plant vigor or their presence in the plant community, or attainment of the upland site standard. The frequency trend data from Key Area PI-01 shows stable to increasing occurrence of winterfat, bud sagebrush and shadscale as well as a significant increase in Indian ricegrass in 2013 (probably from a flush of seedlings/young plants). Most of the livestock use occurs during the time when the key forage plants are dormant which substantially reduces the impacts on plant vigor, seed production and new plant establishment important to maintain rangeland health.

The frequency data from Key Area PI-02 shows that both Indian ricegrass and winterfat had previously declined from the frequencies recorded in 1989 and 1995; however, the frequency for Indian ricegrass since then has remained stable with winterfat showing a significant increase between 2009 and 2013. Utilization levels on these two species were within the light to low moderate range (Appendix 3) during the evaluation period which indicates that livestock use was probably not a primary factor affecting the area. Shadscale and bud sagebrush, both native perennial half-shrubs, have been increasing at this key area which adds additional vegetative cover and roots for site stability, and enhances soil moisture infiltration and permeability.

However, there are some patches of highly disturbed ground from rodent activities scattered around these salt desert shrub communities on which grow mostly weedy plants such as halogeton and Russian thistle (tumbleweed). Although the rodent holes and related soil mounding around the holes increases aeration, water infiltration and permeability, these patches also support undesirable weeds whose seeds can spread across the fans.

During a visit to the two key areas on September 10, 2014, various indicators related to water infiltration, soil permeability and stability, and plant health were assessed. After digging a hole in the interspaces between plants, roots were common in the soil holes showing that roots from adjacent plants were growing well into the interspaces. The sites were well occupied by perennial plants such as winterfat, Indian ricegrass, bud sagebrush, shadscale, a few Sandberg bluegrass, and a rare squirreltail and globe mallow. Halogeton was present but uncommon occurring as single individuals of modest size in a few interspaces and no Russian thistle observed within the transect areas which indicates these plant communities are able to resist the establishment of persistent colonies of weedy species, with the exception of areas thoroughly disturbed by rodents as noted above. There were no signs of gully formation around the key area. There were also no litter accumulations/small soil dams that might indicate accelerated erosion along water runoff areas. There was no pedestalling of plants observed at Key Area PI-01 but there were a few pedestalled plants at Key Area PI-02. The pedestalled plants at Key Area PI-02 appeared to be related to somewhat higher natural erosion levels in that area due to larger rocks in the soil but, generally, both key areas exhibited the smooth undulations that often occur between the slight rises of soil around plants and the slight depressions in the interspaces.

The assessments of rangeland health indicate the key area sites are responding primarily to weather related effects that fall within the normal range of variability for the area. Livestock

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grazing use does not seem to be a primary factor affecting current rangeland health. Therefore, it appears that livestock use is in conformance with the guidelines for rangeland health in reference to the upland standard.

## **Standard 2. Riparian and wetland sites**

Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.

### **As indicated by:**

- Stream side riparian areas are functioning properly when adequate vegetation, large woody debris, or rock is present to dissipate stream energy associated with high water flows. Elements indicating proper functioning condition such as avoiding accelerating erosion, capturing sediment, and providing for groundwater recharge and release are determined by the following measurements as appropriate to the site characteristics:
- Width/Depth ratio; Channel roughness; Sinuosity of stream channel; Bank stability; Vegetative cover (amount, spacing, life form); and Other cover (large woody debris, rock).
- Natural springs, seeps, and marsh areas are functioning properly when adequate vegetation is present to facilitate water retention, filtering, and release as indicated by plant species and cover appropriate to the site characteristics.
- Chemical, physical and biological water constituents are not exceeding the state water quality standards.

### **Guidelines:**

- 2.1 Livestock grazing management will maintain or promote sufficient vegetation cover, large woody debris, or rock to achieve proper functioning condition in riparian and wetland areas. Supporting the processes of energy dissipation, sediment capture, groundwater recharge, and stream bank stability will thus promote stream channel morphology (e.g., width/depth ratio, channel roughness, and sinuosity) appropriate to climate, landform, gradient, and erosional history.
- 2.2 Where livestock grazing management is not likely to restore riparian and wetland sites, land management treatments should be designed and implemented where appropriate to the site.
- 2.3 Livestock grazing management will maintain, restore, or enhance water quality and ensure the attainment of water quality that meets or exceeds state standards.
- 2.4 Livestock grazing management is adequate when significant progress is being made toward this standard.

The above indicators shall be applied to the potential of the ecological site.

All of the above indicators are appropriate to the potential of the ecological site.

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## Determination:

	Achieving the Standard
X	Not Achieving the Standard, but making significant progress towards achieving
	Not Achieving the Standard, and not making significant progress toward standard

## Guidelines Conformance:

X	In conformance with the Guidelines
	Not in conformance with the Guidelines

## Conclusions:

### **This standard is not being met.**

There are several riparian and wetland areas that are associated with small perennial streams and springs within the allotment. There are 33 springs and 5 streams on BLM administered land totaling about 3 miles in stream length. Additional water resources are present on private land within the allotment boundary. Most springs and streams are located in the higher elevations around Pilot peak where snowpack accumulates and snowmelt can persist into early summer. Flows in these springs and streams varies widely from several cubic feet per second of surface flow in the springtime to only subsurface flow in late summer. The riparian areas associated with these high elevation waters are narrow and located on hillslopes or within steep stream channels. There is one stream and a few springs in valley bottoms that exhibit different characteristics from those in higher elevation. These valley bottom springs and streams have relatively constant flows and exhibit naturally high salt concentrations. Many low elevation springs feed nearby ponds which are surrounded by herbaceous riparian vegetation.

BLM conducted riparian proper functioning condition (PFC) assessments, collected stream survey data, and completed water resources inventory to make the determination for Standard 2. BLM determined that most of the riparian/wetland areas in the allotment are achieving the standard because:

- Most of the PFC assessments resulted in ratings of properly functioning condition and there were no non-functional ratings.
- Stream survey and water resources inventory data indicated that streams are in good condition and impacts from livestock grazing to water resources is minimal.
- Water resources are meeting state water quality criteria.

A summary of the methodology and results of the data collection are presented below:

### Proper Functioning Condition Assessments

Lentic proper functioning condition (PFC) assessments were conducted to evaluate the condition of selected riparian areas within the Pilot Allotment. Riparian condition assessments are qualitative assessments of riparian areas based on quantitative science. The methodology evaluates the functionality of riparian areas based on hydrological, vegetation, and

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soils/erosional factors, within the context of the geologic setting and the potential of the area. Prichard et al. (1999) suggests the following definitions for spring and lentic areas:

“Lentic riparian-wetland areas are functioning properly when adequate vegetation, landform, or debris is present to:

- 1) dissipate energies associated with wind action, wave action, and overland flow from adjacent sites, thereby reducing erosion and improving water quality;
- 2) filter sediment and aid floodplain development;
- 3) improve flood-water retention and ground-water recharge;
- 4) develop root masses that stabilize islands and shoreline features against cutting action;
- 5) restrict water percolation;
- 6) develop diverse ponding characteristics to provide the habitat and water depth, duration, and temperature necessary for fish production, water bird breeding, and other uses;
- 7) and support greater biodiversity.”

PFC assessments were completed during 2008 on 7 of the 33 springs located on public land within the allotment (See Figure 5). Six of the springs assessed are located within the valley bottoms south and southeast of Pilot Peak (these springs are located in areas that are grazed by livestock) and one of the assessed springs is located on the west slope of Pilot Peak. Five of the lentic areas were rated in properly functional condition, one was functional at risk with no apparent trend and one was rated as functional at risk with downward trend. In general, riparian areas visited for this assessment were in good condition. Direct impacts from grazing were cited as a causal factor for one of the functional at risk ratings. A narrative of the PFC assessments for each site is presented below. Sites are identified by: Water Resource Inventory ID; Lentic Area ID; Source Name:

**N35 E70 29AA; Pilot 1; Little Salt Spring:** The PFC assessment rated this site as being in proper functioning condition. The riparian area is located in the valley bottom south of Pilot Peak and consists of a small pond of open water surrounded by sedges, salt cedar, salt grasses and pickle weed. The spring was fenced in 1999 which excluded livestock from the riparian area. Water in the pond is high in conductivity and sulfur. The site’s capability is limited by the high mineral content of its waters and surrounding soil, and livestock degradation is not a factor as there is little vegetation utilization, bank trampling or loitering at this spring.

**N35 E70 17DD; Pilot 2; South Sand Dune Spring:** The PFC assessment rated this site as functional at risk with no apparent trend. The riparian area is located in the valley bottom south of Pilot Peak and consists of a small pond of open water surrounded by sedges, rushes, salt grasses and pickle weed. The banks exhibited 20% trampling. Numerous dead cattle around the site suggest high use at times, but also a possible detrimental factor to livestock health. The sites’ capacity is limited by the high mineral content of the surrounding soil and the dryness of the region, which restricts riparian



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vegetation to the area directly adjacent to the spring source. The site has been impacted, but it is unknown whether degradation or recovery is occurring.

**N35 E70 09DA Complex; Pilot 3, 4, 5; Sand Springs:** The PFC assessments rated these sites as being in properly functioning condition. The riparian area is located in the valley bottom south of Pilot Peak and consists of several spring fed ponds surrounded by riparian vegetation covering about 18 acres. The sites are within the alkali flats and has very limited riparian consisting of reeds and grasses surrounded by salt grasses and pickle weed. The banks exhibit some ungulate trampling, but considering the saturated clay component of the soil it does not show undue degradation. The sites capability is limited by the soils high salt content and the dryness of the region, which restricts riparian vegetation to the area directly adjacent to the spring source. Livestock degradation is not a factor as there is little vegetation to promote loitering at the site and the soil is resistant to trampling damage. Dead cattle are present at the sites.

**N36 E69 32AD; Pilot 6; Cummings/Small Spring:** The PFC assessment rated this site as functional at risk with downward trend. The riparian area is located adjacent to and downstream of a spring in the bottom of Pilot Valley which flows into a stream known as Pilot Creek. The PFC assessment includes about 17 acres of riparian area that occurs along a 1.5 mile long perennial stretch of this stream. At the site the stream consists of a deep incised channel (15' deep) with dense willows and herbaceous wetland vegetation growing along the stream bottom. The northern portion of the riparian area exhibits little direct impact from livestock due to the steepness of the banks and high density of woody vegetation at the site, however, livestock impacts, including streambank trampling, was noted in May, 2013 within the southern portion of this riparian area. There are negative impacts due to infestation of salt cedar at the site which is why the site was rated as functional at risk. In addition, a substantial stand of phragmites, a non-native invasive that can out-compete native species to become an undesirable monoculture, was noted in 2013.

**N36 E69 12DC; Pilot 7; Magpie Spring:** The PFC assessment rated this site as being in proper functioning condition. The riparian area is located adjacent to and downstream of a spring in a steep canyon on the west slope near the foot of Pilot Peak. The area is thick woodland and the spring source is choked with stinging nettle. Wetland shrub species are present but there are no herbaceous species. There is no indication of livestock use.

### Stream Survey and Water Resources Inventory

Stream survey and water resources inventory data have been collected and recorded on streams and riparian areas within the Pilot Allotment from 1979 to 2009. Water resource inventory has been done on most known water resources and includes information regarding location, flow rates, water quality, and condition of springs, streams, and ponds in the allotment. Stream habitat surveys have been completed on all of the perennial streams within the allotment and include width/depth ratio, bank cover, bank stability, and pool/riffle ratio measurements for these streams.

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In general, streams and springs are in good condition and exhibit excellent vegetative cover and few impacts from cattle. Some of the streams are susceptible to erosion and washout frequently, however this is a result of their presence in the steep canyons of Pilot Peak. In addition, several streams and springs are diverted for municipal use. The decrease in water at the sources diverted for municipal use likely results in less downstream stability since less water is available to establish stabilizing riparian vegetation. A summary of all of the existing stream survey data and a portion of the water resource inventory data on the five streams in the allotment are presented below:

**Bettridge Creek:** The stream is fed by snowmelt and springs which emerge from talus slopes in the upper elevations of the Pilot Peak Range. Three stream survey sites were completed on the upper 1.4 miles Nevada segment of Bettridge Creek in 2005. These stream survey stations rated 95 percent of optimum for riparian condition indices (RCI), or excellent condition. The width to depth ratio was 11 and the average stream width was 3.6 feet. The stream had excellent streambank vegetative cover. Bettridge Creek has a very steep stream gradient and could be susceptible to streambank erosion, but the stream has high rock content and dense streambank vegetation. No livestock grazing use occurs on the Nevada portion of the stream due to the steep topography.

**Donner (Morrison) Creek:** The stream is fed by snowmelt and an un-inventoried spring in a steep canyon on the west slope in the upper elevations of the Pilot Peak Range. The latest stream survey was completed on four sites on the Nevada portion of Donner Creek in 2005 and the overall RCI was excellent at 97 percent of optimum. The average stream width was 3.9 feet and the stream had a width/depth ratio of 16. The pool/riffle ratio was 86 percent of optimum. No livestock grazing use occurs on the Nevada portion of the stream due to the steep topography. Streambanks have excellent cover and stability.

**Miners Canyon:** The canyon is host to a large spring which, along with snowmelt, supports about 1/3 mile of perennial stream. Water from the stream is diverted near the source which limits the development of riparian vegetation. The stream is densely vegetated and there are few impacts from cattle.

**Debbs Canyon:** The canyon is host to a perennial stream about 1.5 miles long which flows in a steep canyon on the north slope of Pilot Peak. No quantitative data are available for this stream, but field observations indicate that the stream is densely vegetated and additionally stabilized by rock. There were no observations of cattle use on the stream.

**Cottonwood Creek:** The stream is fed by snowmelt and Cottonwood Spring in a steep canyon on the west slope in the upper elevations of the Pilot Peak Range. Snowmelt results in considerable flow in this stream in the springtime but most of the baseflow is diverted by an aqueduct for municipal use in Wendover. Development of riparian vegetation for much of the stream is limited by lack of dependable flow as a result of the diversion. Even though the stream is diverted there is enough vegetation and rock to adequately dissipate the energy associated with high flows. No livestock grazing use occurs on the Nevada portion of the stream due to the steep topography.

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## Water Quality

Nevada State Water quality criteria as outlined in Nevada Administrative Code (NAC) 445A apply to water resources within the allotment. There are no numeric criteria established for any of the water resources, Narrative standards contained in NAC 445A.121 apply to all surface waters of the state including streams and springs and require waters to be “free from” various pollutants. The State of Nevada publishes a record of all waters which are not meeting state water quality standards which is known as the 303(d) list. None of the waters within the Pilot Allotment are recorded in this list as violating state water quality standards.

BLM records and observations indicate that there are no external or unnatural influences on water sources within the Pilot Allotment which would result in these resources not meeting narrative water quality criteria. Several of the springs in the lower elevations of Pilot Valley do exhibit very high levels of dissolved solids which may make these waters unsuitable for drinking, but this is a natural condition which has not been influenced by human activity.

## **Standard 3. Habitat**

*Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.*

### **As indicated by:**

- Vegetation composition (relative abundance of species);
- Vegetation structure (life forms, cover, heights, or age classes)
- Vegetation distribution (patchiness, corridors);
- Vegetation productivity; and
- Vegetation nutritional value.

### **Guidelines:**

- 3.1 Livestock grazing management will promote the conservation, restoration and maintenance of habitat for threatened and endangered species, and other special status species as may be appropriate.
- 3.2 Livestock grazing intensity, frequency, season of use and distribution should provide for growth and reproduction of those plant species needed to reach long-term land use plan objectives. Measurements of ecological condition and trend/utilization will be in accordance with techniques identified in the *Nevada Rangeland Monitoring Handbook*.
- 3.3 Livestock grazing management should be planned and implemented to allow for integrated use by domestic livestock, wildlife, and wild horses and burros consistent with land use plan objectives.
- 3.4 Where livestock grazing is not likely to achieve habitat objectives, land treatments may be designed and implemented as appropriate.
- 3.5 When native plant species adapted to the site are available in sufficient quantities, and it is

## Pilot Allotment Standards Determination Document

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economically and biologically feasible to establish or increase them to meet management objectives, they will be emphasized over non-native species.

3.6 Livestock grazing management is adequate when significant progress is being made toward this Standard.

The above indicators shall be applied to the potential of the ecological site.

All of the above indicators are appropriate to the potential of the ecological site.

### Determination:

	Achieving the Standard
X	Not Achieving the Standard, but making significant progress towards achieving
	Not Achieving the Standard, and not making significant progress toward standard

### Guidelines Conformance:

X	In conformance with the Guidelines
	Not in conformance with the Guidelines

### Conclusion

**This standard is not being met.**

Livestock management is considered to be in conformance with the guidelines. The determination of non-conformance with the Standard was related to historic overgrazing by livestock, variability in weather patterns and other factors.

Two range key areas (PI-01 and PI-02) occur in antelope year-round habitat consisting of salt desert scrub (Figure 6). Two additional wildlife key areas (DW-2-T-03 and DW-1-T-02) were established in 2009 to monitor mule deer crucial winter range in Collar and Elbow Basin, on the western edge of the allotment (Figure 7). Collar and Elbow basin is a preferred wintering site for deer but high snow years may force most of the herd south into the foothills above Silverzone Pass. There is also a small elk herd that uses this area in the summer, but elk have not been documented overwintering here. Figure 8 shows Elko habitat in the Pilot Allotment.

### Key Area PI-01

The Potential Natural Vegetation (PNV) at this site (028AY002NV) would be dominated by the key species winterfat and Indian ricegrass, consisting of approximately 60% grasses, 5% forbs and 35% shrubs (by dry weight). Production data collected in 2013 indicated that plant composition was heavily skewed toward shrubs (83.4%) and lacked the desired proportion of grasses (16.5%) and forbs (0.1%). Ocular estimates during a site visit in September, 2014, indicated that the site appeared to contain less Indian ricegrass than much of the surrounding area. Frequency trend data indicated recent significant increases in Indian ricegrass, winterfat and bud sagebrush occurrence. The ecological site description describes plant community dynamics on this site as follows:

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*As ecological condition deteriorates, galleta, sand dropseed, downy rabbitbrush and shadscale increase as winterfat, Indian ricegrass and bud sagebrush decrease. With further site deterioration, cheatgrass, halogeton, Russian thistle and annual mustards invade the interspace areas between shrubs.*

Given this characterization of plant community dynamics on this ecological site, the documented increases in occurrence of the key species winterfat and Indian ricegrass indicate that the vegetation community is trending toward desired composition, despite the fact that it is currently skewed toward shrubs and lacks the desired proportion of herbaceous species. Bud sagebrush, a minor component (2-8%) of the PNV community, also increased significantly in occurrence and comprised 26% of vegetation production in 2013, contributing significantly to the dominant shrub component. The lack of invasive annual species indicates the site has not crossed an ecological threshold and is not likely to become degraded provided it is properly managed. This trend has occurred under the current grazing management regime, indicating that livestock grazing is in conformance with the guidelines and is likely not a contributing factor to the skewed vegetation composition of the habitat represented by this key area.

Utilization of Indian ricegrass ranged from 29% to 66% (mean 56%) and utilization of winterfat ranged from 34% to 70% (mean 44%) between 1999 and 2009. The recorded utilization levels during this time period exceeded maximum utilization objectives on at least one key species in seven of eight years, but average utilization remained below maximum allowable levels (60% for Indian ricegrass and 50% for winterfat). Although maximum use levels were exceeded during several years of the evaluation period, most livestock grazing occurred during the winter dormancy period, enabling production and dissemination of seeds and minimizing impact on carbohydrate reserves of plants.

The habitat condition ratings for pronghorn antelope have consistently been in the 'fair' category, but have declined at every rating since 1989, until 2013 when the rating dropped into the 'poor' category. The decline in the ratings over time was driven primarily by the increases of native half-shrubs (from 46 percent composition in 1989 to 82 percent composition in 2013) without a commensurate increase in perennial forbs or grasses (Table 15). Thus, the habitat represented by this key area has limited suitability for pronghorn antelope.

In summary, the current vegetation composition at PI-01 is not appropriate to the potential of the site. The near complete lack of forbs and overabundance of shrubs does not provide suitable habitat for many animal species, including pronghorn antelope. This key area does not currently meet the Habitat Standard, but some positive trends were noted, including increased frequency of white sage and Indian ricegrass. Finally, invasive annual species were not a significant component of the vegetation community, indicating that there is little risk of deterioration due to conversion to annual species (Table 9). Current livestock grazing management was not identified as a causal factor for not meeting the Standard.

### Key Area PI-02

Based on observation of the vegetation on site and examination of the soils, this key area is likely a mix of two ecological sites; 028AY002NV and 028AY018NV. The first is a winterfat site and the latter is a shadscale site, both containing Indian ricegrass as the primary herbaceous species

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(comprising 30-50% of the vegetation community by dry weight, depending on site type). Shadscale was the dominant shrub at the site in terms of production, although winterfat had a higher frequency of occurrence.

Production data collected in 2013 indicated that plant composition was heavily skewed toward shrubs (94.0%) and almost completely lacked grasses (4.1%) and forbs (1.9%) (Table 13). Regardless of the actual ecological site designation or the degree of intermixing of the two potential site types, the habitat represented by this key area lacked the appropriate herbaceous component, which would comprise about 60-65% of the vegetation community at PNV. Although 2013 was the second consecutive drought year, actual total production (752 lbs/ac) was similar to that expected for a favorable year (700-800 lbs/ac) (Table 10). Trend data indicated a decrease in Indian ricegrass occurred from 1995 to 2009/2013 (Table 7). Also noted were an increase in shadscale from 1995 to 2013 and a likely increase in bud sagebrush from 1995 to 2009.

Given the uncertainty regarding ecological site designation, determination of vegetation dynamics at this site was somewhat problematic. The decrease in Indian ricegrass frequency is indicative of a deteriorating trend regardless of site designation, while the increase in winterfat, an important forage species for wildlife such as pronghorn antelope, indicates a positive trend. However, the increased frequency of winterfat was not accompanied by a concomitant increase in production (Table 10) but an increase in shadscale frequency was; 42-50% of total productivity in 2009/2013 was due to shadscale, a species indicative of site decline and one which should not comprise more than 30% of total vegetative composition, regardless of which ecological site is present. Shadscale was significantly less frequent in 1995 and comprised only 17% of total vegetative production at that time. The currently skewed vegetation composition and recent deteriorating trend in desired grass species on this site indicate that this vegetation community is not currently meeting the Standard and is trending further away from desired condition. Also of concern was the significant increase in halogeton occurrence in 2009 and 2013 (Table 7). Halogeton is indicative of ecological deterioration in salt desert scrub communities. In contrast, cheatgrass frequency declined during this same time period (Table 7).

Utilization of Indian ricegrass ranged from 17% to 57% (mean 35%) and utilization of winterfat ranged from 8% to 53% (mean 32%) between 1999 and 2009. The utilization level on Indian ricegrass was below maximum allowable in all but one year and was never exceeded on winterfat. Most livestock grazing occurred during the winter dormancy period, enabling production and dissemination of seeds and minimizing impact on carbohydrate reserves of plants. This indicates that current livestock management is not likely a significant contributor to failing to meet the Standard at this key area.

The habitat condition ratings for pronghorn antelope have consistently been in the 'fair' category, until 2013 when the site was rated as 'poor'. The decline in the ratings over time was driven primarily by the increases of native half-shrubs (from 78 percent composition in 1989 to 93 percent composition in 2013) without a commensurate increase in perennial forbs or grasses (Table 16). Thus, the habitat represented by this key area has limited suitability for pronghorn antelope.



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In summary, the current vegetation composition at PI-02 is not appropriate to the potential of the site and it does not meet the Habitat Standard. The near complete lack of an herbaceous component and overabundance of shrubs does not provide suitable habitat for many animal species, including pronghorn antelope. An increase in frequency of an invasive annual species, halogeton, indicates moderate risk of further deterioration due to annual conversion (Table 7). The paucity of herbaceous species present at this key area is likely related to factors that may include chronic effects of historic overgrazing, prolonged drought, and other weather conditions not favorable for long-term increases in the perennial grasses. Current livestock grazing management was not identified as a causal factor for not meeting the Standard.

### Key Area DW-1-T-02

This key area was established in 2009 at the southern end of the Collar and Elbow Basin (Figure 7). Because sagebrush was a major component of deer forage in the northern end of the basin, which contained a nominal amount of bitterbrush, this study site was located in a purely sagebrush site to determine if use of sagebrush was only high if bitterbrush was present. Sagebrush utilization at this site was 38%, comparable to utilization at DW-2-T-03.

This key area and the following key area are designated Priority General Habitat (PGH) habitat for sage-grouse and crucial winter habitat for mule deer. Both key areas are designated as 028BY006NV sites, but are located very close to a 28BY093NV site (both of which are black sagebrush sites). A mountain sagebrush site is also located nearby. The key areas appear to occur in an ecotone between two or more of these sites, thus the actual ecological site was unclear and it may be a mix of two or more of these sites. Nevertheless, Potential Natural Vegetation at all of these sites is similar, consisting of about 60% grasses, 5% forbs, and 35% shrubs (by dry weight), dominated by sagebrush and perennial bunchgrasses including bluebunch wheatgrass and Indian ricegrass. Total ground cover (basal and crown) from the ecological site descriptions is also the same, approximately 15-25%.

Production data collected in 2009 indicated the composition of grasses, forbs and shrubs was 18.8%, 7.9% and 73.3%, respectively (Table 12). Line intercept data collected in 2013 indicated similar proportions, although further skewed toward shrubs (Table 13). The mule deer habitat rating for winter was 'fair', due primarily to a poor species diversity index and cover rating (Table 17). Encroachment of pinyon-juniper into the shrub community at this site (Appendix 7) indicates that habitat conditions for mule deer and sagebrush obligate species, including sage-grouse, are currently less than ideal. The ecological site description states "When pinyon and juniper occupy this site they compete with other species for available light, moisture and nutrients. If pinyon-juniper canopies are allowed to close, they can eliminate all understory vegetation." It is likely that without some sort of natural (e.g., wildfire) or anthropogenic (e.g., conifer reduction or removal) disturbance this site will continue to be increasingly occupied by conifers, thus reducing habitat suitability for mule deer and sagebrush obligates, including sage-grouse.

### Key Area DW-2-T-03

Key area DW-2-T-03 is located in north Collar and Elbow Basin and was established to monitor utilization of bitterbrush. Although the area is designated crucial mule deer winter range, bitterbrush occurrence was limited and intermixed with sagebrush and pinyon/juniper. Deer



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utilization of bitterbrush and little sagebrush in August, 2009, was 26 and 44%, respectively. In May, 2013 utilization of the two species was 22 and 10%, respectively, while utilization on black sagebrush was 15%. Note that comparison between years may be confounded by the different timing of measurements (May 17 vs. August 3).

Determination of ecological site was again problematic, with the key area appearing to lie within an ecotone between one or more similar ecological sites. Similar to the above key area, Potential Natural Vegetation composition at all these sites is similar, consisting of about 60% grasses, 5% forbs, and 35% shrubs (by dry weight). Line-intercept data collected in 2013 indicated vegetation composition was 24% grass (almost all cheatgrass), 6% forbs, and 69% shrubs. The habitat rating in 2013 was 'fair' (Table 18). The presence of a significant cheatgrass component is indicative of deteriorating site conditions, and pinyon-juniper trees, although not recorded along the transect, were encroaching on the site (Appendix 6; Figure 16).

Total canopy cover was 33.7% (Appendix 5; Table 11) while vertical obstruction cover was 12.3%. Utilization of current year's growth on little sagebrush, black sagebrush and antelope bitterbrush was 15%, 15%, and 22%, respectively, most of which was attributed to mule deer. Also noted was evidence of hedging during previous years.

The presence of a substantial amount of cheatgrass and encroachment of pinyon-juniper into the shrub community at this site indicate that habitat conditions for mule deer and sagebrush obligate species, including sage-grouse, are currently not desirable and that conditions will likely continue to deteriorate rather than progress in a positive direction.

### **Additional considerations for bighorn sheep within the Pilot Allotment**

A small population of reintroduced Rocky Mountain bighorn sheep (a BLM Sensitive Species) on Pilot Peak has expanded south to the Leppy Hills, resulting in two disjunct use areas (Figure 9). This expansion was first observed in 2002 and bighorn use has been consistent in both areas. A composition survey was conducted in August, 2013, with 39 bighorns classified, resulting in sex and age ratios of 37 rams: 100 ewes: 7 lambs (NDOW 2014).

Because cattle and bighorn use areas have almost no overlap within the allotment, there is little likelihood of cattle grazing impacting bighorns or their habitat. However, an authorized domestic sheep trailing permit allows domestic sheep to trail less than a mile from designated bighorn habitat (Figure 9), far less than the typical buffer distances recommended by WAFWA (WAFWA 2012) and NDOW. BLM has monitored the sheep trailing and has documented no interaction between bighorns and domestic sheep. A water development (guzzler) was constructed in 2008 in the north Leppy Hills and an existing development was reconstructed on Pilot Peak in 2011 to encourage bighorn to remain at higher elevations. These water developments have decreased bighorn use of watering locations at lower elevations, thus decreasing the likelihood of bighorn contact with domestic sheep trailing through the allotment at lower elevations.

Despite these efforts, in 2010, several bighorn were observed coughing, shaking their heads and were in poor body condition (NDOW 2014). Three bighorns were tested for disease, which confirmed bacterial pneumonia was present in the population. This disease event has severely

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impacted recruitment; lambs are being born, but they are not being recruited into the population. Thus, the short-term outlook for this herd is poor (NDOW 2014). The close proximity of bighorn and domestic sheep within the Pilot Allotment and adjacent allotments in Utah is likely the proximate cause of the disease outbreak, thus it is reasonable to conclude that because of this situation bighorn sheep are not being afforded appropriate living space as described in the Habitat Standard.

## **Fisheries**

The headwaters of Bettridge and Donner (Morrison) Creeks are located in the Pilot Allotment. The creeks are located on the extreme eastern side the Pilot Allotment on Pilot Peak. Approximately 1.4 miles of Bettridge Creek are located on public land within Nevada. The upper portion of Donner (Morrison) Creek is located entirely on public land in Nevada and flows into Utah. The Nevada portions of the streams are inaccessible to livestock and therefore there are no potential impacts to fisheries resources from livestock.

## **Standard 4. Cultural Resources:**

*Land use plans will recognize cultural resources within the context of multiple-use.*

### **Guidelines:**

4.1 Rangeland management plans will consider listings of known sites that are National Historic Register eligible or considered to be of cultural significance and new eligible sites as they become known.

**This standard is being met, and livestock grazing is in conformance with the guideline.**

Based on the evaluation of existing information pertaining to range improvements and grazing, cultural resources are being recognized within the context of multiple use management in the Pilot Allotment.

### Determination:

X	Achieving the Standard
	Not Achieving the Standard, but making significant progress towards achieving
	Not Achieving the Standard, and not making significant progress toward standard

### Guidelines Conformance:

X	In conformance with the Guidelines
	Not in conformance with the Guidelines

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## Management Recommendations:

As detailed in Part III, Standards 2 and 3 are not being met, but significant progress is being made toward attainment of the standards and current livestock grazing management is in conformance with the respective guidelines. The BLM suggests the following changes in management be considered (singly or in combination) within the Pilot Allotment:

1. Calculate and implement a new stocking rate for the Pilot Allotment (excluding the Pilot FFR pasture.
2. Issue a term permit for sheep trailing on the eastern portion of Pilot Peak, and monitor for compliance.
3. Continue the current season of use for the allotment.
4. Flexibility in livestock numbers, not to exceed active AUMs, will be allowed within identified grazing periods to allow for flexibility in the overall grazing operations.
5. Continue rangeland monitoring of the Pilot Allotment for livestock in compliance with proper allowable use levels and vegetative conditions.
6. Fencing and treatment of invasive species on the Pilot Creek riparian area is recommended to improve riparian functionality and encourage progression toward Standard 2.
7. Drill a well in the eastern portion of the Pilot Allotment.
8. Maximum utilization levels on the Pilot Allotment are recommended to remain as follows:
  - Winterfat: 50% of current year's growth
  - Indian Ricegrass: 60% of current year's growth.
9. Livestock will be moved to another authorized pasture or removed from the allotment before utilization objectives are met or no later than 5 days after meeting the utilization objectives. Any deviation in livestock movement will require authorization from the authorized officer.
10. If objective use levels are exceeded, schedule off date would be adjusted the following year to March 31, and remain in effect until monitoring indicates incremental extensions or further reductions in period of use are warranted.
11. Consider establishing additional key areas to monitor use by estray feral horses, particularly on the lower benches of Pilot Peak and to monitor us by livestock north of Silver Zone Pass.

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I Concur:

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Bryan K. Fuell  
Field Manager, Wells Field Office

Date

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## **Appendix 1 PILOT ALLOTMENT EVALUATION MULTIPLE USE OBJECTIVES**

### **GENERAL LAND USE PLAN (LUP) OBJECTIVES (1985)**

#### **Livestock Grazing:**

To provide for livestock grazing consistent with other resource uses.

#### **Terrestrial Wildlife Habitat:**

1. To conserve and/or enhance wildlife habitat to the maximum extent possible.
2. Eliminate all of the fencing hazards in crucial big game habitat, most of the fencing hazards in non-crucial big game habitat.
3. Eliminate all of the high and medium priority terrestrial riparian habitat conflicts in coordination with other resource uses.
4. Manage public lands in the Wells Resource Area on a sustained yield basis to support elk populations at a level consistent with other resource needs, while minimizing impacts to adjacent private and public land resources.

#### **Riparian/Stream Habitat:**

1. Improve high and medium priority riparian/stream habitat to at least good condition. [Techniques resulting in a minimum improvement of 30% in habitat condition over the short-term (within seven years) would be used.]
2. Prevent undue degradation of all riparian/stream habitat due to other uses.



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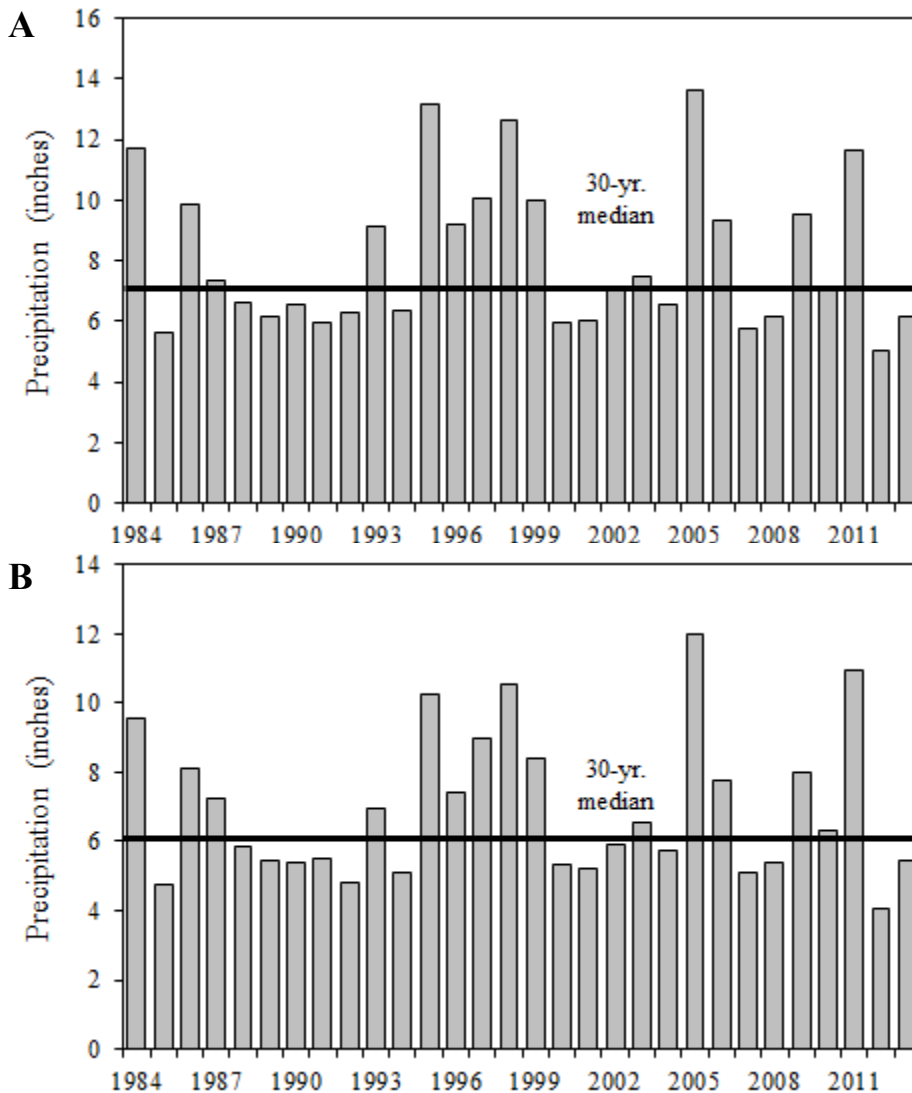
## **Appendix 2 Precipitation and Climatic Adjustment Factor**

BLM derived precipitation data and climatic adjustment factors (CAF) from data developed through the Parameter-elevation Regressions on Independent Slopes Model (PRISM) climate Figureping system. PRISM maintains a new website at <http://prism.oregonstate.edu/>; BLM used precipitation data from the PRISM Data Explorer located on the old PRISM website (<http://oldprism.nacse.org/>) to compile precipitation information for the Pilot Allotment. Methods used by the PRISM model are described in Daly, et. al. (2008), located at [http://prism.oregonstate.edu/documents/Daly2008\\_PhysiographicFigureping\\_IntJnlClim.pdf](http://prism.oregonstate.edu/documents/Daly2008_PhysiographicFigureping_IntJnlClim.pdf).

The Climatic Adjustment Factor (CAF) is calculated from methodologies described in Sneva and Britton (1983). CAF is derived from Crop Year precipitation, which is measured from September of the previous calendar year through the following June. This is the precipitation which most affects plant growth. CAF can be used to normalize carrying capacity and vegetation production to what would be expected during a median precipitation year.

Precipitation data for key areas PI-01 and PI-02 are summarized in Figures A and B below.

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Figures A and B. Crop-year (September-June) precipitation from 1984 to 2013 for Key Area PI-01 (Figure A) and Key Area PI-02 (Figure B) (PRISM Climate Group 2014). The horizontal black line represents the 30-year crop-year precipitation median. The above graphs show that Key Area PI-01 tends to receive more precipitation (the median precipitation over time is about one inch more) than Key Area PI-02.

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## Appendix 3 Carrying Capacity Analysis

The formula used to calculate the carrying capacity is as follows:

$$\frac{\text{Actual Use (AUMs)} \times \text{Utilization Objective}}{\text{Recorded Utilization}} = \text{Carrying Capacity}$$

*The carrying capacity calculations for the Pilot Allotment are summarized in the tables below based on data from key areas PI-01 and PI-02. Key Area PI-01 shows a pre-CAF carrying capacity of 2,480 AUMs (2,457 AUMs after the CAF is applied), while Key Area PI-02 shows a pre-CAF carrying capacity of 4,531 AUMs (3,852 AUMs after the CAF is applied).*

The time period of 11/1 to 3/31 is winter dormancy for most plants and occurs outside the critical season of plant growth, therefore there is less potential that the vegetation would be damaged by proper grazing.

The BLM has standardized the utilization objective for the key grass species at 60% and 50% for key shrub species of current year's growth. The BLM believes this level of use is compatible with achievement of the land use plan objectives and standards for rangeland health, and establishes a consistent utilization objective in the Pilot Allotment. When monitoring a key area the highest level of use in relation to the utilization objective is used as the limiting factor the site. The BLM has established a utilization objective for winterfat at 50% of current year's growth at the end of the spring use period (April 15) which combines the utilization objective for both livestock and wildlife.

Utilization data was collected at key areas and/or taken from levels of use recorded on use pattern maps.

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PI-01

<b>Table 3: KEY AREA PI-01 MATRIX</b>							
Range Site: R028AY002NV, Native Pasture, Coarse Silty 5-8" P.Z. Key Species: Indian ricegrass (ACHY), Winterfat (KRLA2)							
Year	Actual Use AUMs	Period of Use	KA Util (%)	Date Read	Pre-CAF Capacity (AUMs)	CAF	Post-CAF Capacity (AUMs)
2013-2014	1945	11/15-4/15	NOT READ			0.72	
2012-2013	2703	11/15-4/15				0.61	
2011-2012	2702	11/15-4/15	NOT READ			1.92	
2010-2011	2660	11/15-4/15	NOT READ			1.02	
2009-2010	2147	11/15-4/15				1.35	
2008-2009	1383	11/15-4/15	ACHY – 59% KRLA2 – 53%	04/27/09	1305	0.73	1788
2007-2008	2990	11/15-4/15	ACHY – 57% KRLA2 – 57%	07/02/08	2623	0.76	3451
2006-2007	2645	11/15-4/15	ACHY – 66% KRLA2 – 66%	04/25/07	2004	1.18	1698
2005-2006	2730	11/15-4/15	ACHY – 29% KRLA2 – 38%	06/12/06	3592	1.80	1996
2004-2005	2467	11/15-4/15	NOT READ			0.95	
2003-2004	2770	11/15-4/15	ACHY – 62% KRLA2 – 70%	05/06/04	1979	0.89	2224
2002-2003	3076	11/15-4/15	ACHY – 65% KRLA2 – 66%	04/30/03	2330	0.75	3107
2001-2002	2986	11/15-4/15	NOT READ			0.90	
2000-2001	3401	11/15-4/15	NOT READ			0.72	
1999-2000	3144	11/15-4/15	NOT READ			1.24	
1998-1999	3054	11/15-4/15	ACHY – 52% KRLA2 – 34%	5/18/99	3524	1.20	2937

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PI-02

<b>Table 4: KEY AREA PI-02 MATRIX</b>							
Range Site: R028AY002NV, Native Pasture, Coarse Silty 5-8" P.Z. Key Species- Indian ricegrass (ACHY), Winterfat (KRLA2)							
Year	Actual Use AUMs	Period of Use	KA Util (%)	Date Read	Pre-CAF Capacity (AUMs)	CAF	Post-CAF Capacity (AUMs)
2013- 2014	1965	11/15-4/15	NOT READ			0.87	
2012- 2013	2703	11/15-4/15	NOT READ			0.59	
2011- 2012	2702	11/15-4/15	NOT READ			1.98	
2010- 2011	2660	11/15-4/15	NOT READ			1.05	
2009- 2010	2147	11/15-4/15				1.38	
2008- 2009	1383	11/15-4/15	ACHY – 47% KRLA2 – 41%	04/27/09	1687	0.86	1961
2007- 2008	2990	11/15-4/15	ACHY – 37% KRLA2 – 53%	05/30/08	2821	0.80	3526
2006- 2007	2645	11/15-4/15	ACHY – 17% KRLA2 – 27%	04/25/07	4898	1.33	3683
2005- 2006	2730	11/15-4/15	ACHY – 27% KRLA2 – 19%	06/12/06	6066	2.18	2783
2004- 2005	2467	11/15-4/15	NOT READ			0.92	
2003- 2004	2770	11/15-4/15	ACHY – 65% KRLA2 – 47%	05/06/04	2557	1.08	2368
2002- 2003	3076	11/15-4/15	ACHY – 44% KRLA2 – 38%	04/30/03	4047	0.95	4260
2001- 2002	2986	11/15-4/15	NOT READ			0.81	
2000- 2001	3401	11/15-4/15	NOT READ			0.84	
1999- 2000	3144	11/15-4/15				1.46	
1998- 1999	3054	11/15-4/15	ACHY – 19% KRLA2 – 8%	05/18/99	9644	1.15	8386

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<b>Table 5: Summary of Calculated Carrying Capacities</b>				
<b>Year</b>	<b>PI-01</b>		<b>PI-02</b>	
	Pre-CAF	Post-CAF	Pre-CAF	Post-CAF
2012-2013				
2011-2012				
2010-2011				
2009-2010				
2008-2009	1305	1788	1687	1961
2007-2008	2623	3449	2821	3526
2006-2007	2004	1698	4898	3683
2005-2006	3592	1996	6066	2783
2004-2005				
2003-2004	1979	2224	2557	2368
2002-2003	2330	3107	4047	4260
2001-2002				
2000-2001				
1999-2000				
1998-1999	3524	2937	9644	8386
Average	2480	2457	4531	3852

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## Appendix 4 Frequency Data

Table 6: KEY AREA PI-01 Nested Frequency Data													
Range Site: R028AY002NV, Native Pasture, Coarse Silty 5-8” P.Z., Key Species: Indian Ricegrass (ACHY), Winterfat (KRLA2)													
Plant Species	8/10/1989			5/17/1995			6/1/2009			5/20/2013			*Significant Changes
	Frame Size			Frame Size			Frame Size			Frame Size			
	3”	10”	30”	3”	10”	30”	3”	10”	30”	3”	10”	30”	
AAFF						2							
ACHY			55.5			55.5	2	9	46.5	14.5	51	93	Decrease 2009 Increase 2013
ARARN						0.5							
ARSP			18.5			51	4.5	23	72.5	2.5	24.5	70.5	Increases 1995-2009
ASTER			1.5			60.5		0.5	1				
ATCO			8.5			8.5	1.5	6.5	20		3.5	17.5	
BRTE			1			3			1	0.5	2.5	6	
CHVI8						2.5		1	3.5		1	3	
CREPIS						1							
CRYPT						5							
DEPI									13.5				
ERIOG			11			12			1		0.5	3.5	
KRLA2		34.5	Not read		47		12	46.5	95	9	52	95	Increases 1995-2013
LERE7									1				
LOMAT						0.5							
PHLO						22.5							
POSE		45.5			73		11.5	51	96	1	5.5	9.5	Increases 1995-2009 Decrease 2009 -2013
RATE											1	1.5	
SIHY		45.5			0.5		0.5	5.5	16			3	Decrease 1995
SPCO			24			11.5			11			6.5	
TETRA						1	0.5	2			2		

\*To be meaningful for interpretation of trend, the same plot size must have been utilized in successive readings, and frequency values should have fallen in a range of 20-80 percent for sampling sensitivity (BLM 1985). Increases or decreases are therefore identified only for instances where these requirements were met or very close to being met. When these requirements were not met, the data are provided but no determination of trend was made.

Table 7: KEY AREA PI-02 Nested Frequency Data													
Range Site: R028AY002NV, Native Pasture, Coarse Silty 5-8” P.Z. Key Species- Indian Ricegrass (ACHY), Winterfat (KRLA2)													
Plant Species	8/9/1989			5/9/1995			6/1/2009			5/20/2013			*Significant Changes
	Frame Size			Frame Size			Frame Size			Frame Size			
	3”	10”	30”	3”	10”	30”	3”	10”	30”	3”	10”	30”	
AAFF							0.5	1	7.5	5.5	17	43.5	
ACHY		15	64		20	64.5	1	3.5	24	2.5	6.5	21.5	Decrease 2009
ARABIS						6.5					1.5	6	
ARSP5			12.5			12.5	1	9	35	2.5	13	39	Increase 2009
ASTER					5	84.5				0.5	0.5	2.5	



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**Table 7: KEY AREA PI-02 Nested Frequency Data**

Range Site: R028AY002NV, Native Pasture, Coarse Silty 5-8" P.Z. Key Species- Indian Ricegrass (ACHY), Winterfat (KRLA2)

Plant Species	8/9/1989			5/9/1995			6/1/2009			5/20/2013			*Significant
ATCO			29		0.5	37	2.5	6.5	45.5	2	13	48	Increases 1995-2013
BRTE			20.5			40.5			1		1	8	
COPA												0.5	
CRYPT						13.5							
DEPI						82			0.5			2.5	
ERIGE						11							
HAGL			17			11	0.5	2.5	23.5	6	17.5	31	Increase 2009 and 2013
KRLA5		40			41		0.5	13	63	7	25.5	82.5	Decrease 2009 Increases -2013
LOMAT						12.5						4.5	
MURI			5.5			1			5				
PHLOX						48							
POSE						3		1	3.5		1.5	6	
PPFF							0.5	1	12.5			4.5	
SIHY			26.5			7					1.5	9.5	Decrease 1995
SPCO			1.5			7		1.5	7		0.5	4.5	
TESP2			1			1			2			2.5	

\*To be meaningful for interpretation of trend, the same plot size must have been utilized in successive readings, and frequency values should have fallen in a range of 20-80 percent for sampling sensitivity (BLM 1985). Increases or decreases are therefore identified only for instances where these requirements were met or very close to being met. When these requirements were not met, the data are provided but no determination of trend was made.

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## Key to Plant Codes

Plant species are referenced by their plant symbol in the tables above, and consist of a combination of the first two letters of the genus and the first two letters of the specific epithet. The naming conventions reported in this document may reflect older naming methodologies: many of the scientific plant names, especially grasses, have changed. The following table shows the plant symbols used in this document, the referenced scientific name, the common name, and the currently accepted name as applicable. Source for names is generally the Nevada Plant List as prepared by the Bureau of Land Management (July 1991), supplemented by the USDA Plants database located at <http://plants.usda.gov/java/> (accessed May 2014).

Table 8: Key to Plant Symbols			
Plant Symbol	Previous Scientific Name	Common Name	Current Scientific Name
<b>Grasses</b>			
BRTE	<i>Bromus tectorum</i>	cheatgrass	--
ORHY/ACHY	<i>Oryzopsis hymenoides</i>	Indian ricegrass	<i>Achnatherum hymenoides</i>
POSE	<i>Poa secunda</i>	Sandberg bluegrass	--
PPGG	--	perennial grass	--
SIHY	<i>Sitanion hystrix</i>	bottlebrush squirreltail	<i>Elymus elymoides</i>
MURI	<i>Muhlenbergia richardsonis</i>	mat muhly	
<b>Forbs</b>			
AAFF	-	annual forb	--
ARABI2	<i>Arabis sp.</i>	rockcress	--
ASTER	<i>Aster sp.</i>	aster	--
COPA3	<i>Collinsia parviflora</i>	maiden blue-eyed mary	--
CREPIS	<i>Crepis L.</i>	hawksbeard	--
CRYPT	<i>Cryptantha sp.</i>	cryptantha	--
DEPI	<i>Descurainia pinnata</i>	Western tansymustard	--
DELPH	<i>Delphinium sp.</i>	larkspur	--
ERIOG	<i>Eriogonum sp.</i>	buckwheat	--
HAGL	<i>Halogeton glomeratus</i>	halogeton	--
LERU7	<i>Lewisia rediviva</i>	bitterroot	--
LOMAT	<i>Lomatium sp.</i>	desert parsley	--
PHLOX	<i>Phlox hoodii</i>	spiny phlox	--
RATE	<i>Ranunculus testiculatus</i>	curvseed butterwort	<i>Ceratocephala testiculata</i>
PPFF	Perennial forb--	perennial forb	--
SPCO	<i>Sphaeralcea coccinea</i>	scarlet globemallow	--
<b>Shrubs</b>			
ARSP5	<i>Artemisia spinescens</i>	bud sagebrush	<i>Picrothamnus desertorum</i>

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Table 8: Key to Plant Symbols			
Plant Symbol	Previous Scientific Name	Common Name	Current Scientific Name
			-
ARAR8	<i>Artemisia arbuscula</i>	little sagebrush	
ARARN	<i>Artemisia nova</i>	black sagebrush	
ARTRT	<i>Artemisia tridentata</i> <i>spp. tridentata</i>	Basin big sagebrush	--
ATCO	<i>Atriplex confertifolia</i>	shadscale saltbush	--
EULA5/KRLA2	<i>Eurotia lanata</i>	winterfat	<i>Krascheninnikovia lanata</i>
GRSP	<i>Grayia spinosa</i>	spiny hopsage	
KOAMV	<i>Kochia americana</i>	green molly	<i>Bassia americana</i>
CHVI8	<i>Chrysothamnus</i> <i>viscidiflorus</i>	Douglas rabbitbrush	--
SSSS	<i>Other shrub</i>	other shrub	
TESP2	<i>Tetradymia spinosa</i>	shortspine horsebrush	--
PUTR2	<i>Purshia tridentata</i>	antelope bitterbrush	--

**Appendix 5**  
**Production Summary**

<b>Table 9: Key Area PI-01</b>				
Range Site: R028AY002NV, , Coarse Silty 5-8" P.Z.				
Species	Total Dry Weight Production (lbs./acre)/Percent Composition of Total			
	08/10/1989	05/17/1995	06/01/2009	05/13/2013
<b>GRASSES</b>				
Indian Ricegrass	53.8/15.2	107.9/14.0	192.2/23.0	55.2/13.9
Squirreltail	76.5/21.6		2.3/0.3	6.6/1.7
Cheatgrass	1.0/0.3			
Sandberg bluegrass	5.5/1.5	39.7/5.0	21.6/2.6	4.0/1.0
Mat muhly	2.3/0.7			
<i>Total grass</i>	<i>139.1/39.3</i>	<i>147.6/19.0</i>	<i>216.1/25.9</i>	<i>65.8/16.6</i>
<b>FORBS</b>				
Buckwheat	2.5/0.7	3.0/0.4		
ASTER/Fleabane		25.9/3.3	0.5/0.1	0.4/0.1
Globemallow	21.6/6.1	2.8/0.4	7.0/0.9	
Phlox		4.4/0.6		
Mustard		6.8/0.9		
Desert parsley		0.4/0.1		
<i>Total forb</i>	<i>24.1/6.8</i>	<i>43.3/5.5</i>	<i>7.5/0.9</i>	<i>0.4/0.1</i>
<b>SHRUBS</b>				
Bud sagebrush	7.8/2.2	201.3/25.6	17.8/2.1	103.8/26.0
Winterfat	132.6/37.5	258.4/32.8	295.3/35.3	178.4/44.7
Shadscale	49.0/13.9	139.1/17.7	298.7/35.8	41.1/10.3
rabbitbrush spp				7.0/1.8
Wyoming big sagebrush				2.3/0.6
<i>Total shrub</i>	<i>189.4/53.6</i>	<i>598.8/76.1</i>	<i>611.8/73.2</i>	<i>332.6/83.4</i>
<b>Grand Total (lbs/acre)</b>	<b>352.6</b>	<b>789.7</b>	<b>835.4</b>	<b>398.8</b>
<b>Ecological Status/Similarity Index**</b>	<b>68.3% Late Seral</b>	<b>67.5% Late Seral</b>	<b>68.9% Late Seral</b>	<b>64.6% Late Seral</b>

**\*\* The ecological status/similarity index is a rating that indicates how similar the composition of the site is to the potential natural community (PNC). PNC is the natural plant community in the absence of abnormal disturbances and physical site deterioration and is also referred to as the historic climax plant community. PNC would be a rating from 76 – 100%. The other categories (seral stages) are: Early Seral 0 – 25%; Mid Seral 26 – 50%, and Late Seral 51 – 75%.**

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<b>Table 10: Key Area PI-02</b>				
Range Site: R028AY002NV Coarse Silty 5-8" P.Z./R028AY018NV, Coarse Gravelly Loam 5-8"				
Species	Total Dry Weight Production (lbs/acre)/Percent Composition of Total			
	08/10/1989	05/09/1995	06/01/2009	05/15/2013
<b>GRASSES</b>				
Indian ricegrass	79.4/20.1	197.6/31.3	11.8/1.5	26.5/3.5
Squirreltail	3.3/0.8			4.7/0.6
Cheatgrass	3.3/0.8	8.3/1.3		
Sandberg bluegrass			4.0/5	
Mat muhly	3.4/0.9			
<i>Total grass</i>	<i>89.3/22.6</i>	<i>205.9/32.6</i>	<i>15.8/2.1</i>	<i>31.2/4.1</i>
<b>FORBS</b>				
Buckwheat		13.7/2.2		
ASTER/Fleabane	0.2/0.04	4.3/0.7		
Globemallow		1.0/0.2	23.2/2.9	14.2/1.9
Phlox		3.8/0.6		
Cryptantha		0.5/0.1		
Mustard		44.2/7.0		
Halogeton	8.6/2.2		36.0/4.5	
Desert parsley		1.9/0.3		
<i>Total forb</i>	<i>8.8/2.2</i>	<i>69.4/11.0</i>	<i>59.2/7.4</i>	<i>14.2/1.9</i>
<b>SHRUBS</b>				
Bud sagebrush	2.3/0.6	4.1/0.7	117.8/14.7	192.6/25.4
Winterfat	128.5/32.6	245.8/38.9	174.5/21.7	192.5/25.4
Rabbitbrush spp.			29.6/3.7	
Green molly	4.2/1.1			
Shadscale	161.4/40.9	106.9/16.9	405.0/50.4	321.6/42.4
<i>Total shrub</i>	<i>296.4/75.1</i>	<i>356.8/56.5</i>	<i>726.9/90.5</i>	<i>706.7/94.0</i>
<b>Grand Total (lbs/acre)</b>	<b>394.5</b>	<b>632.1</b>	<b>801.9</b>	<b>752.1</b>
<b>Ecological Status/Similarity Index**</b>	<b>61.8/68.5*** Late Seral/Late Seral</b>	<b>75.8/67.7 Low PNC/Late Seral</b>	<b>41.6/62.9 Mid Seral/Late Seral</b>	<b>44.4/61.0 Mid Seral/Late Seral</b>

**\*\* The ecological status/similarity index is a rating that indicates how similar the composition of the site is to the potential natural community (PNC). PNC is the natural plant community in the absence of abnormal disturbances and physical site deterioration and is also referred to as the historic climax plant community. PNC would be a rating from 76 – 100%. The other categories (seral stages) are: Early Seral 0 – 25%; Mid Seral 26 – 50%, and Late Seral 51 – 75%.**

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\*\*\* Two ratings are provided. The first number and seral stage is the rating in comparison to PNC for ecological site R028AY002NV (Coarse Silty 5-8”), and the second number and seral stage is the rating in comparison to PNC for ecological site R028A018NV (Coarse Gravelly Loam 5-8”).

**Table 11. Summary of production data collected at Key Area DW-2-T-03, August 3, 2009.**

Species	Production (lbs/acre)	Percent Composition
<b>GRASSES</b>		
Cheatgrass	276.3	13.9
Bluebunch wheatgrass	10.8	0.5
Sandberg bluegrass	21.3	1.1
<i>Total grass</i>	<i>308.4</i>	<i>15.5</i>
<b>FORBS</b>		
Astragalus spp.	10.2	0.5
Lepidium spp.	33.0	1.7
<i>Total forb</i>	<i>43.2</i>	<i>2.2</i>
<b>SHRUBS</b>		
Mountain big sagebrush	288.9	14.5
Green rabbitbrush	44.7	2.2
Gray rabbitbrush	58.2	2.9
Antelope bitterbrush	936.3	47.0
Wyoming big sagebrush	285.6	14.4
Singleleaf pinyon	23.1	1.2
<i>Total shrub</i>	<i>1636.8</i>	<i>82.2</i>
<b>GRAND TOTAL</b>	<b>1990.5</b>	<b>100.0</b>

**Table 12. Summary of production data collected at Key Area DW-1-T-02, August 3, 2009.**

Species	Production (lbs/acre)	Percent Composition
<b>GRASSES</b>		
Cheatgrass	16.3	1.8
Bluebunch wheatgrass	38.5	4.3
Sandberg bluegrass	68.1	7.7
Western wheatgrass	26.8	3.0
Thurber's needlegrass	17.6	2.0
<i>Total grass</i>	<i>167.3</i>	<i>18.8</i>
<b>FORBS</b>		
Lupine spp.	43.5	4.9
Thorn skeletonweed	10.3	1.2
Pepperweed	16.2	1.8
<i>Total forb</i>	<i>70.0</i>	<i>7.9</i>

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<b>SHRUBS</b>		
Sagebrush spp	652.5	73.3
<i>Total shrub</i>	652.5	73.3
<b>GRAND TOTAL</b>	<b>889.8</b>	<b>100.0</b>

**Table 13.** Line intercept cover data collected at key area DW-1-T-02, May 17, 2013.

	Cover (tenths of a foot)	Composition (%)
<b>Grass</b>		
Bluebunch wheatgrass	9.0	2.0
Cheatgrass	0.4	Trace
Thickspike wheatgrass	4.0	0.9
Thurber's needlegrass	101.7	22.4
<b>Forb</b>		
Bastard toadflax	5.5	1.2
Buckwheat spp.	16.7	3.7
Groundsmoke	0.2	Trace
Longleaf phlox	3.4	0.7
Lupine spp.	8.0	1.8
Maiden blue-eyed mary	1.5	0.3
Tapertip hawksbeard	2.6	0.6
Thorn skeletonweed	8.5	1.9
<b>Shrub</b>		
Sagebrush spp.	293.0	64.5
<b>Total</b>	454.5 (45.5% cover)	100.0

**Table 14.** Line intercept cover data collected at key area DW-2-T-03, May 17, 2013.

	Cover (tenths of a foot)	Composition (%)
<b>Grass</b>		
Cheatgrass	70.5	20.9
Sandberg bluegrass	5.0	1.5
Thurber's needlegrass	5.5	1.6
<b>Forb</b>		
Annual mustard spp.	2.0	0.6
Bastard toadflax	1.0	0.3
Buckwheat spp.	6.0	1.8
Desertparsely spp.	5.0	1.5
Groundsmoke	0.2	0.1
Maiden blue-eyed mary	4.2	1.2
Tapertip onion	1.0	0.3
Whitetop spp.	1.5	0.4

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<b>Shrub</b>		
Antelope bitterbrush	116.5	34.6
Little sagebrush	19.0	5.6
Rabbitbrush	14.0	4.2
Sagebrush spp.	85.5	25.4
<b>Total</b>	336.9 (33.7% cover)	100.0



## Appendix 6

### Monitoring Photos

PI-01



**Figure 1 Key Area PI-01, 1989**



**Figure 2 Key Area PI-01, 2013.**



# Pilot Allotment Standards Determination Document

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PI-02



**Figure 3 Key Area PI-02, 1989**



**Figure 4. Key Area PI-02, 2013.**



**Figure 3. Key Area DW-1-T-02, 2013.**





**Figure 5. Line intercept transect at Key Area DW-2-T-03, 2013.**

# Pilot Allotment Standards Determination Document

## Appendix 7: Big Game Habitat Ratings

**Table 15. Pronghorn Antelope Yearlong Habitat Condition ratings at key area PI-01.**

Date: 10 August 1989		
A. Water Availability Rating:		
Miles to Water (to 1/2 mile)	2	10
B. Vegetation Quality Rating:		
Forbs (to 0.1%):	6.8	6
Grasses (to 0.1%):	39.3	16
Shrubs (to 0.1%):	53.6	3
C. Vegetation Quantity Rating (lbs/acre):	352.6	5
D. Vegetation Height Rating (inches):	5	5
Total Score:		45
Rating:		Fair*
Date: 11 Sep 1995		
A. Water Availability Rating:		
Miles to Water (to 1/2 mile)	2	10
B. Vegetation Quality Rating:		
Forbs (to 0.1%):	5.5	5
Grasses (to 0.1%):	19.0	9
Shrubs (to 0.1%):	76.1	2
C. Vegetation Quantity Rating (lbs/acre):	790	10
D. Vegetation Height Rating (inches):	5	5
Total Score:		41
Rating:		Fair
Date: 1 June 2009		
A. Water Availability Rating:		
Miles to Water (to 1/2 mile)	2	10
B. Vegetation Quality Rating:		
Forbs (to 0.1%):	0.9	0
Grasses (to 0.1%):	25.9	12
Shrubs (to 0.1%):	73.2	2
C. Vegetation Quantity Rating (lbs/acre):	835.4	10
D. Vegetation Height Rating (inches):	5	5
Total Score:		39
Rating:		Fair
Date: 15 May 2013		
A. Water Availability Rating:		
Miles to Water (to 1/2 mile)	2	10
B. Vegetation Quality Rating:		
Forbs (to 0.1%):	0.1	0
Grasses (to 0.1%):	16.6	8
Shrubs (to 0.1%):	83.4	1
C. Vegetation Quantity Rating (lbs/acre):	398.8	5
D. Vegetation Height Rating (inches):	5	5
Total Score:		29
Rating:		Poor

\*Pronghorn antelope habitat ratings (BLM Manual 6630):

61-105: Good

31-60: Fair

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5-30: Poor

**Table 16. Pronghorn Antelope Yearlong Habitat Condition Ratings at Key Area PI-02.**

Date: 10 August 1989		
A. Water Availability Rating:		
Miles to Water (to 1/2 mile)	2	10
B. Vegetation Quality Rating:		
Forbs (to 0.1%):	2.2	2
Grasses (to 0.1%):	22.6	10
Shrubs (to 0.1%):	75.1	2
C. Vegetation Quantity Rating (lbs/acre):	394.5	5
D. Vegetation Height Rating (inches):	7	5
Total Score:		34
Rating:		Fair
Date: 11 September 1995		
A. Water Availability Rating:		
Miles to Water (to 1/2 mile)	2	10
B. Vegetation Quality Rating:		
Forbs (to 0.1%):	11.0	10
Grasses (to 0.1%):	32.6	14
Shrubs (to 0.1%):	56.5	3
C. Vegetation Quantity Rating (lbs/acre):	632.1	10
D. Vegetation Height Rating (inches):	7	5
Total Score:		52
Rating:		Fair
Date: 1 June 2009		
A. Water Availability Rating:		
Miles to Water (to 1/2 mile)	2	10
B. Vegetation Quality Rating:		
Forbs (to 0.1%):	7.4	7
Grasses (to 0.1%):	2.1	1
Shrubs (to 0.1%):	90.5	0
C. Vegetation Quantity Rating (lbs/acre):	801.9	10
D. Vegetation Height Rating (inches):	7	5
Total Score:		33
Rating:		Fair
Date: 15 May 2013		
A. Water Availability Rating:		
Miles to Water (to 1/2 mile)	2	10
B. Vegetation Quality Rating:		
Forbs (to 0.1%):	1.9	1
Grasses (to 0.1%):	4.1	2
Shrubs (to 0.1%):	94.0	0
C. Vegetation Quantity Rating (lbs/acre):	752.1	10
D. Vegetation Height Rating (inches):	7	5
Total Score:		27
Rating:		Poor

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**Table 17. Mule deer habitat condition at key area DW-1-T-02**

Date: 5/17/2013						
Wildlife Season of Use: deer winter						
Big Game Range Name: Toano crucial winter mule deer						
A. Browse Vigor Rating:						
Key Browse Species:						
Age Class Rating:					0	
Form Class Rating:					0	
B. Forage Quality Rating:						
Diversity Index:	0.675	Rating:	Poor	5		
Forage Quantity Adjustment:	45.00%	(Vegetative Cover)		-0		
	<u>OR</u>					
Forage Quantity Adjustment:		(lbs/ac)		0		
Total Rating:					5	
C. Cover Rating:	11.00%	Rating:	Poor		5	
D. Disturbance Rating:		juniper encroachment			13	
E. Water Distribution Rating:					16	
Comment: Diversity index from 2013 line intercept data. Forage quantity adjustment from 2013 line intercept data. Cover rating from 2013 density board.						
					Subtotal:	39
					Correction Factor:	1.47
					Total Score:	57.33
					Rating:	
					Fair*	

\*Mule deer habitat ratings (BLM Manual 6630):

81-100: Excellent

61-80: Good

51-60: Fair

10-50: Poor

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**Table 18. Mule deer habitat condition at key area DW-2-T-03.**

Date: 5/17/2013					
Wildlife Season of Use: winter					
Big Game Range Name: Toano crucial winter mule deer					
A. Browse Vigor Rating:					
Key Browse Species:	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>				
Age Class Rating:	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>			0	
Form Class Rating:	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>			0	
B. Forage Quality Rating:					
Diversity Index:	0.862	Rating:	Fair	9	
Forage Quantity Adjustment:	33.70%	(Vegetative Cover)		-2	
OR					
Forage Quantity Adjustment:	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>	(lbs/ac)		0	
Total Rating:					7
C. Cover Rating:	12.30%	Rating:	Poor		5
D. Disturbance Rating:					13
E. Water Distribution Rating:					16
Comment: Diversity index from 2013 line intercept data. Forage quantity from 2013 line intercept data. Cover rating from 2013 density board.					41
					1.47
					60.27
					Good



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**Table 19. Elko BLM Sensitive Species list (not all species are found within Pilot Allotment).**

Scientific Name	Common Name	USFWS Status <sup>1</sup>	NV Range <sup>2</sup>	BLM Criteria <sup>3</sup>
<b>Amphibians</b>				
<i>Rana pipiens</i>	northern leopard frog		YR	1,2
<i>Rana luteiventris</i>	Columbia spotted frog (including Toiyabe spotted frog subpopulation)	Candidate	YR	1,2
<b>Birds</b>				
<i>Falco peregrinus</i>	Peregrine Falcon		YR	
<i>Accipiter gentilis</i>	Northern Goshawk		B	1
<i>Aquila chrysaetos</i>	Golden Eagle		YR	2
<i>Haliaeetus leucocephalus</i>	Bald Eagle		YR	1
<i>Buteo regalis</i>	Ferruginous Hawk		B	1,2
<i>Buteo swainsoni</i>	Swainson's Hawk		B	1
<i>Centrocercus urophasianus</i>	Greater Sage-Grouse	Candidate	YR	1
<i>Charadrius alexandrinus nivosus</i>	Western Snowy Plover	T	B	1,2
<i>Lanius ludovicianus</i>	Loggerhead Shrike		YR	1
<i>Leucosticte atrata</i>	Black Rosy-Finch		YR	2
<i>Melanerpes lewis</i>	Lewis' Woodpecker		YR	1
<i>Gymnorhinus cyanocephalus</i>	Pinyon Jay		YR	
<i>Oreoscoptes montanus</i>	Sage Thrasher		B	1
<b>Fish</b>				
<i>Gila bicolor isolata</i>	Independence Valley tui chub		YR	2
<i>Gila bicolor newarkensis</i>	Newark Valley tui chub		YR	2
<i>Lepidomeda copei</i>	Northern leatherside chub		YR	1
<i>Oncorhynchus clarki henshawi</i>	Lahontan cutthroat trout	T	YR	1,2
<i>Oncorhynchus mykiss gairdneri</i>	inland Columbia Basin redband trout		YR	2
<i>Relictus solitarius</i>	relict dace		YR	2
<i>Rhinichthys osculus lethoporus</i>	Independence Valley speckled dace	E	YR	1,2
<i>Rhinichthys osculus oligoporus</i>	Clover Valley speckled dace	E	YR	1,2
<i>Salvelinus confluentus</i>	Bull trout	T	YR	1,2
<b>Mammals</b>				
<i>Antrozous pallidus</i>	pallid bat		YR	2
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat		YR	1,2

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<i>Euderma maculatum</i>	spotted bat		YR	1,2
<i>Eptesicus fuscus</i>	big brown bat		YR	2
<i>Lasionycteris noctivagans</i>	silver-haired bat		YR	2
<i>Lasiurus cinereus</i>	hoary bat		B	2
<i>Myotis californicus</i>	California myotis		YR	2
<i>Myotis ciliolabrum</i>	western small-footed myotis		YR	2
<i>Myotis evotis</i>	long-eared myotis		YR	2
<i>Myotis lucifugus</i>	little brown myotis		YR	2
<i>Myotis thysanodes</i>	fringed myotis		YR	2
<i>Myotis yumanensis</i>	Yuma myotis		YR	2
<i>Pipistrellus hesperus</i>	western pipistrelle		YR	2
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat		YR	2
<i>Brachylagus idahoensis</i>	pygmy rabbit	petitioned	YR	1
<i>Sorex preblei</i>	Preble's shrew		YR	2
<i>Ochotona princeps</i>	pika		YR	1,2
<b>Reptiles</b>				
none				
<b>Insects</b>				
<i>Euphilotes pallescens mattonii</i>	Mattoni's blue butterfly		YR	2
<b>Mollusks</b>				
<i>Anodonta californiensis</i>	California floater		YR	2
<i>Pygulopsis humboldtensis</i>	Humboldt pyrg		YR	2
<i>Pyrgulopsis villacampae</i>	Duckwater Warm Springs pyrg	petitioned 2009	YR	2
<i>Pyrgulopsis vinyardi</i>	Vinyards pyrg		YR	1,2
<i>Tryonia clathrata</i>	Grated tryonia	petitioned 2009	YR	1,2
<b>Plants</b>				
<i>Antennaria arcuata</i>	Meadow pussytoes	Species of Concern		1, 2
<i>Astragalus anserinus</i>	Goose Creek milkvetch	Candidate		1, 2
<i>Boechera falcifructa</i>	Elko rockcress	Species of Concern		1,2
<i>Collomia renacta</i>	Barren Valley collomia	Species of Concern		1, 2
<i>Erigeron latus</i>	Broad fleabane	Species of Concern		1, 2
<i>Eriogonum beatleyae</i>	Beatley buckwheat			1
<i>Eriogonum lewisii</i>	Lewis buckwheat	Species of Concern		1

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<i>Eriogonum nutans</i> var. <i>glabratum</i>	Deeth buckwheat		1
<i>Ivesia rhypara</i> var. <i>rhypara</i>	Grimy mousetails	Former candidate	1
<i>Lathyrus grimesii</i>	Grimes vetchling	Species of Concern	1,2
<i>Lepidium davisii</i>	Davis peppergrass	Species of Concern	1, 2
<i>Leptodactylon glabrum</i>	Owyhee prickly phlox	Species of Concern	2
<i>Mentzelia tiehmii</i>	Tiehm blazingstar		1
<i>Penstemon idahoensis</i>	Idaho beardtongue		2
<i>Phacelia minutissima</i>	Least phacelia	Species of Concern	2
<i>Potentilla cottamii</i>	Cottam cinquefoil	Species of Concern	1
<i>Ranunculus tritermatus</i>	Obscure buttercup		1
<i>Silene nachlingerae</i>	Nachlinger catchfly	Species of Concern	1
<i>Viola lithion</i>	Rock violet	Species of Concern	1

<sup>1</sup>**Candidate:** Species for which the FWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act, but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

**Petitioned:** petitioned for listing as a Threatened or Endangered species.

**T:** Listed as Threatened.

**E:** Listed as Endangered.

**Species of Concern:** An informal term used to refer to species that are declining or appear to be in need of conservation.

<sup>2</sup>**YR:** Year-round resident

**B:** Breeding season resident

<sup>3</sup>**1.** There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or

**2.** The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk (From BLM Manual 6840-Special Status Species Management).

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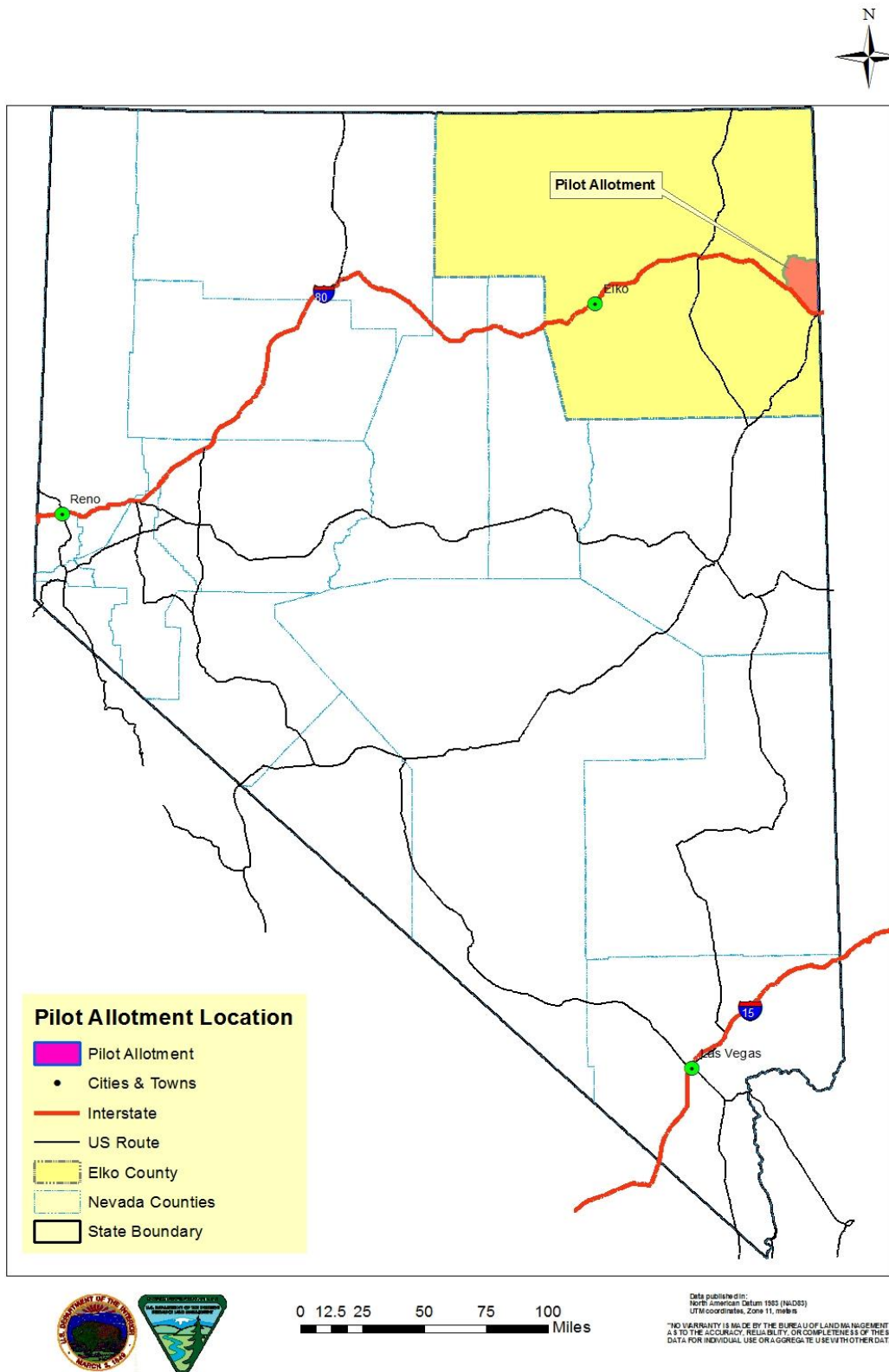


Figure 1 Location of Pilot Allotment in Elko County.

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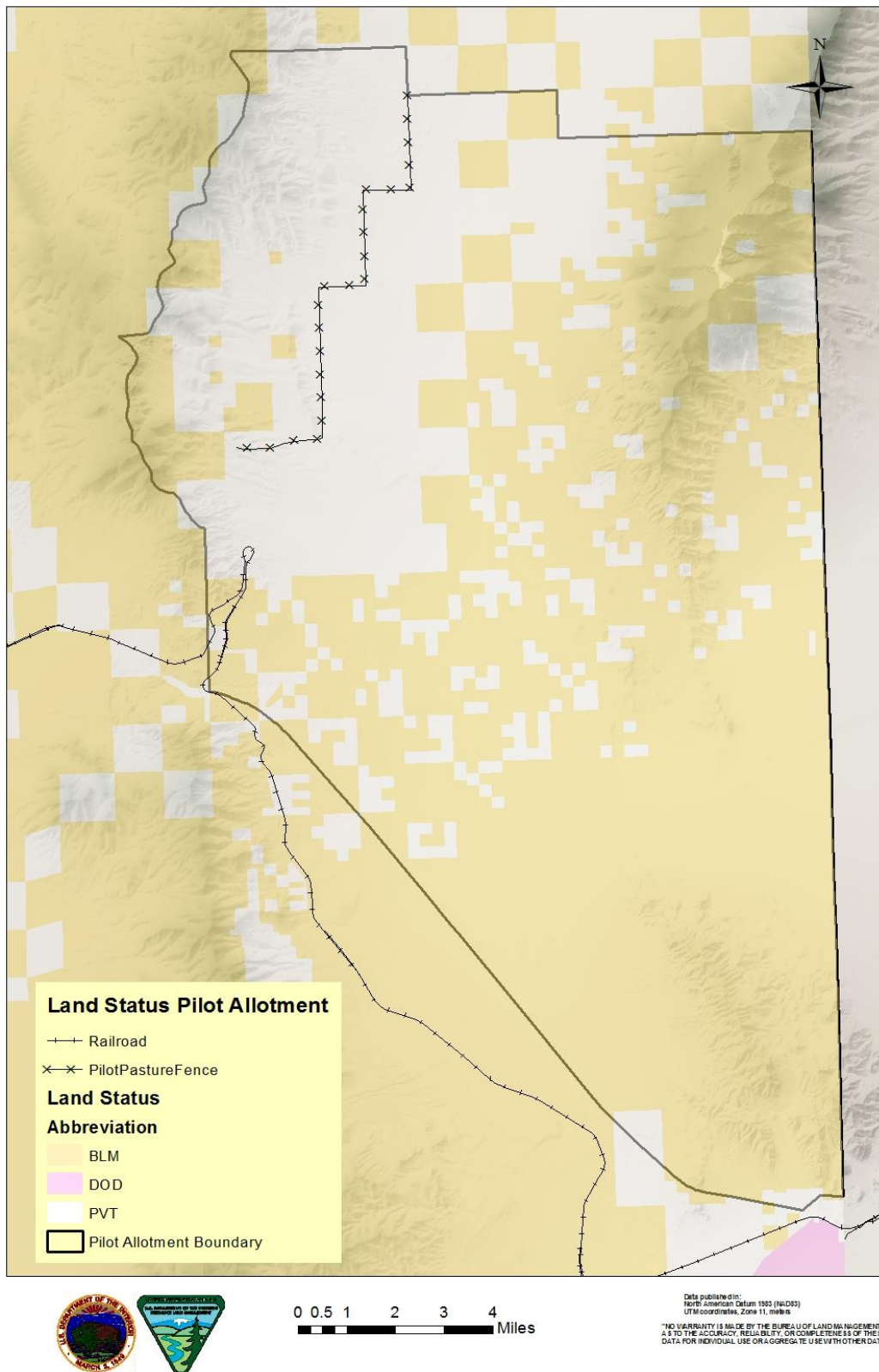


Figure 2 Location of private lands in the Pilot Allotment.



# Pilot Allotment Standards Determination Document

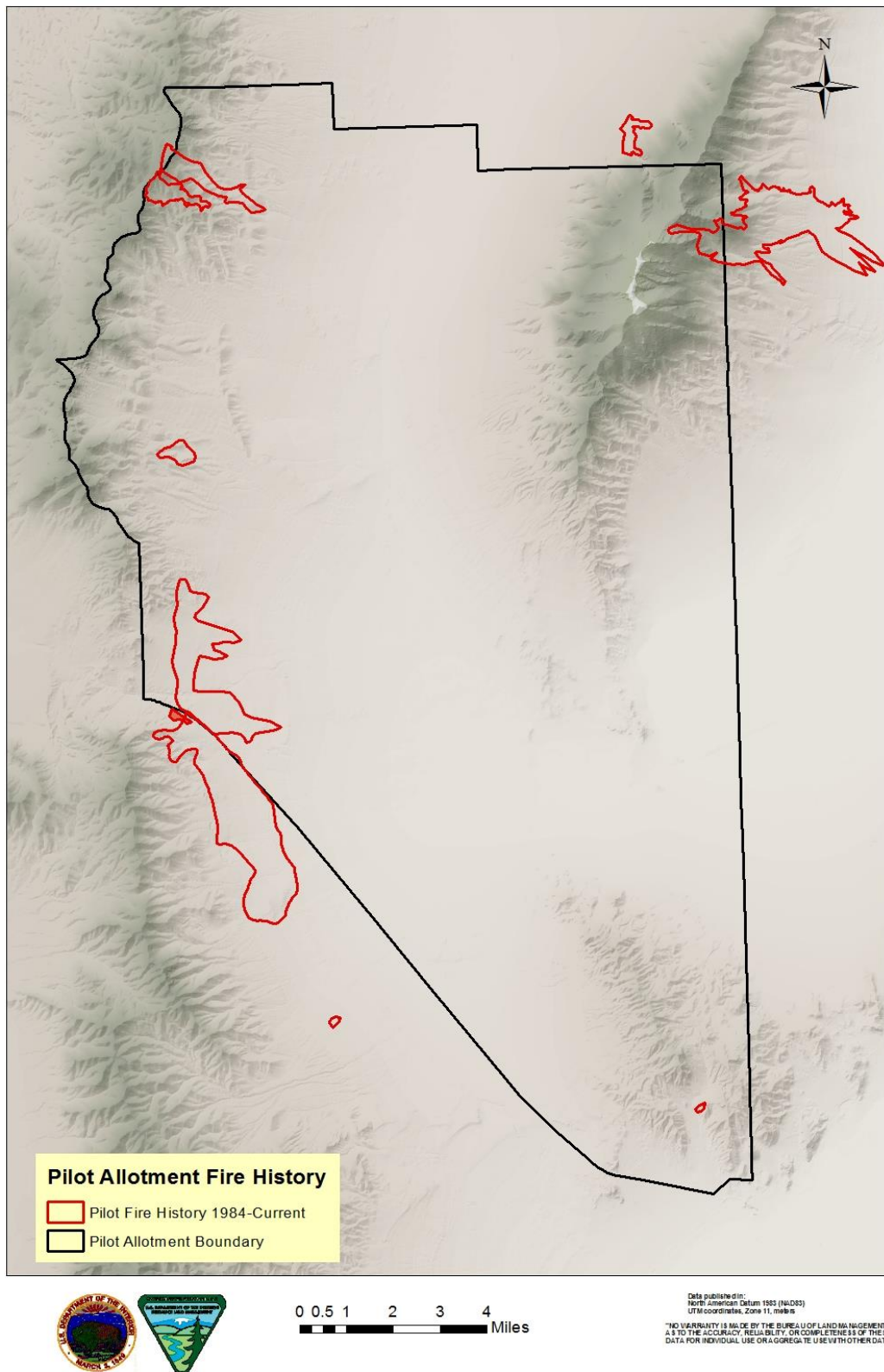
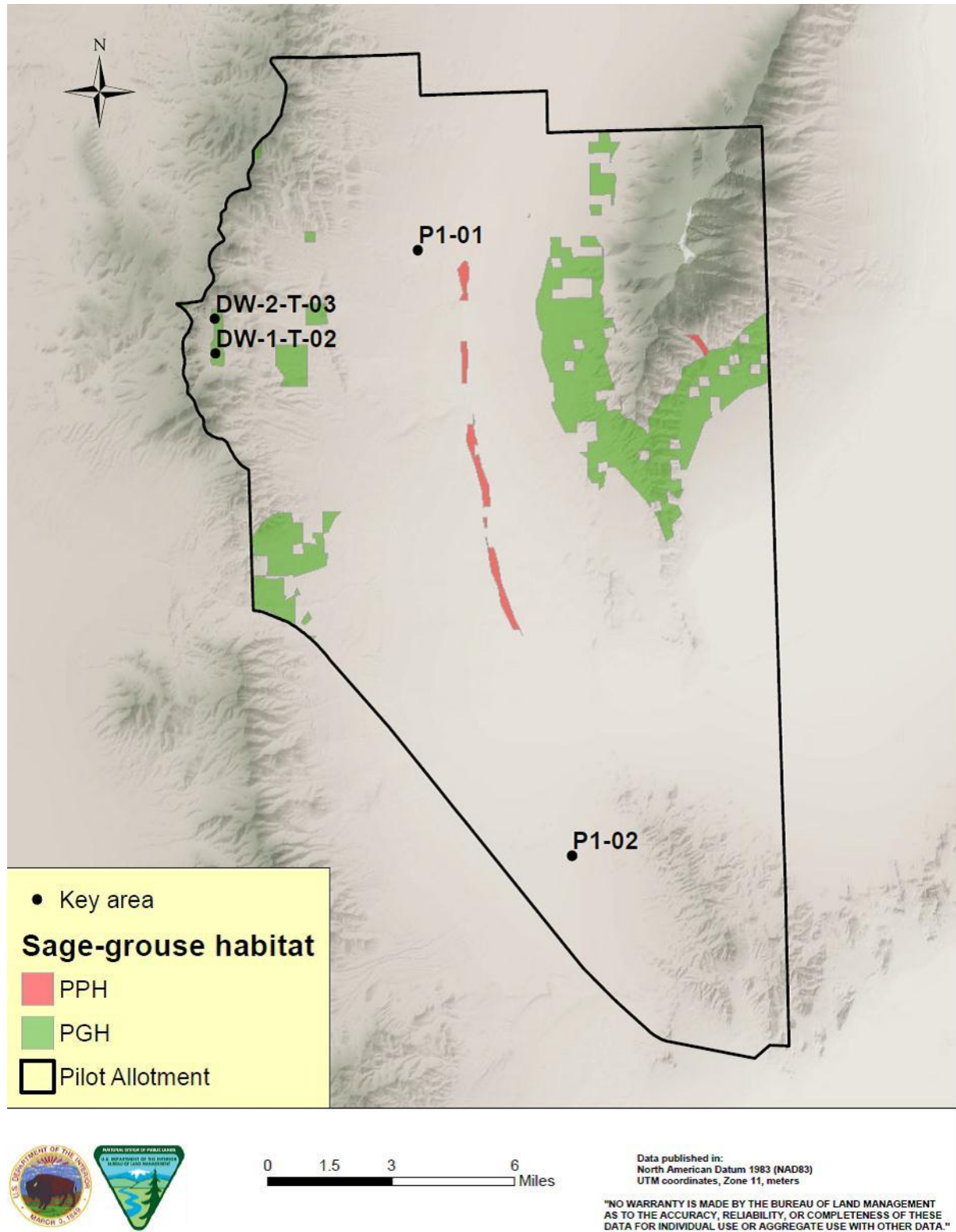


Figure 3 Pilot fire history 1984 – Present.



**Figure 4 Greater Sage-Grouse habitat within the Pilot Allotment. Although designated habitat exists, sage-grouse are not currently known to use these areas.**



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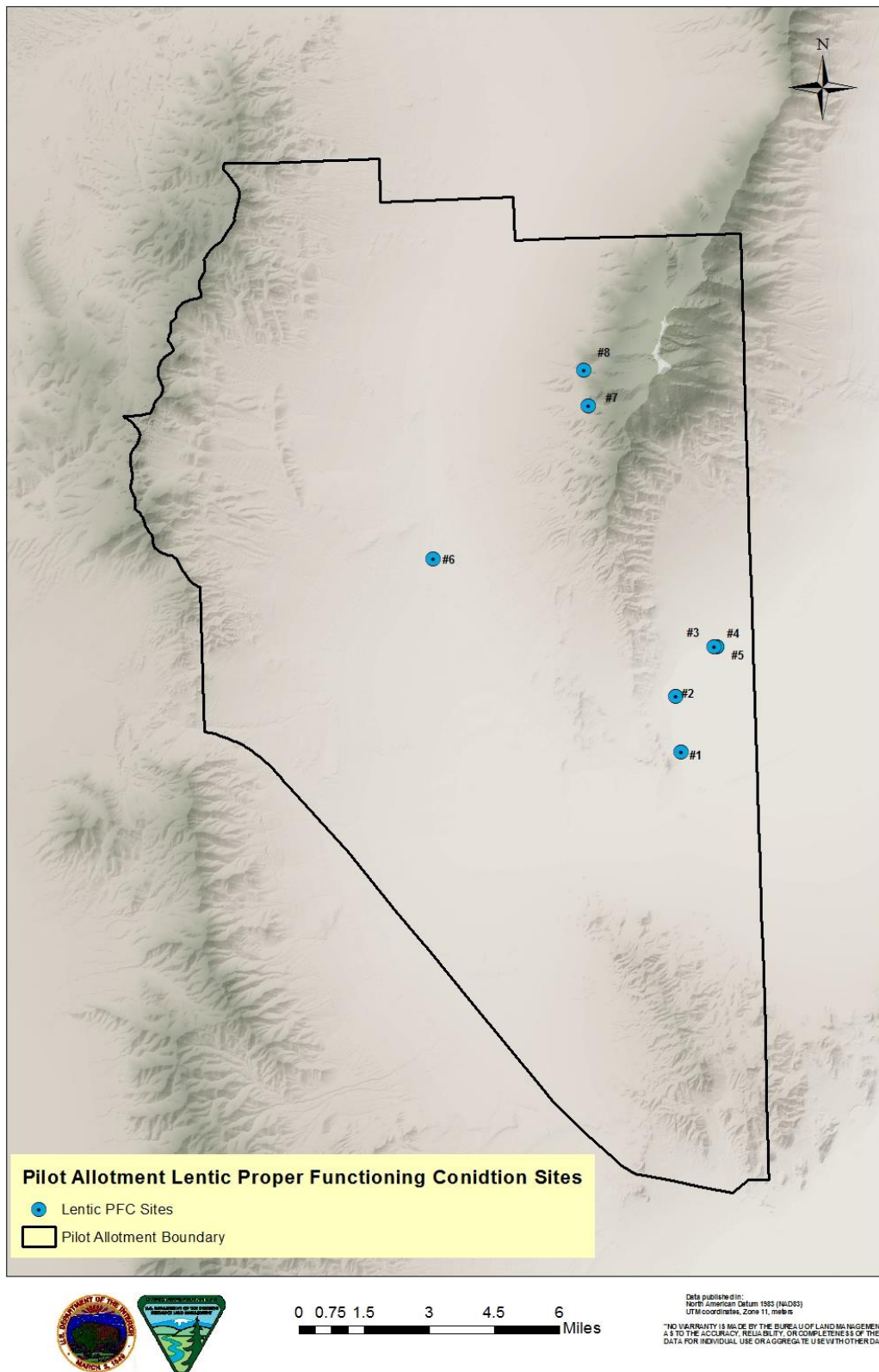


Figure 5 Pilot Allotment Lentic Proper Functioning Condition Sites.

## Pilot Allotment Standards Determination Document

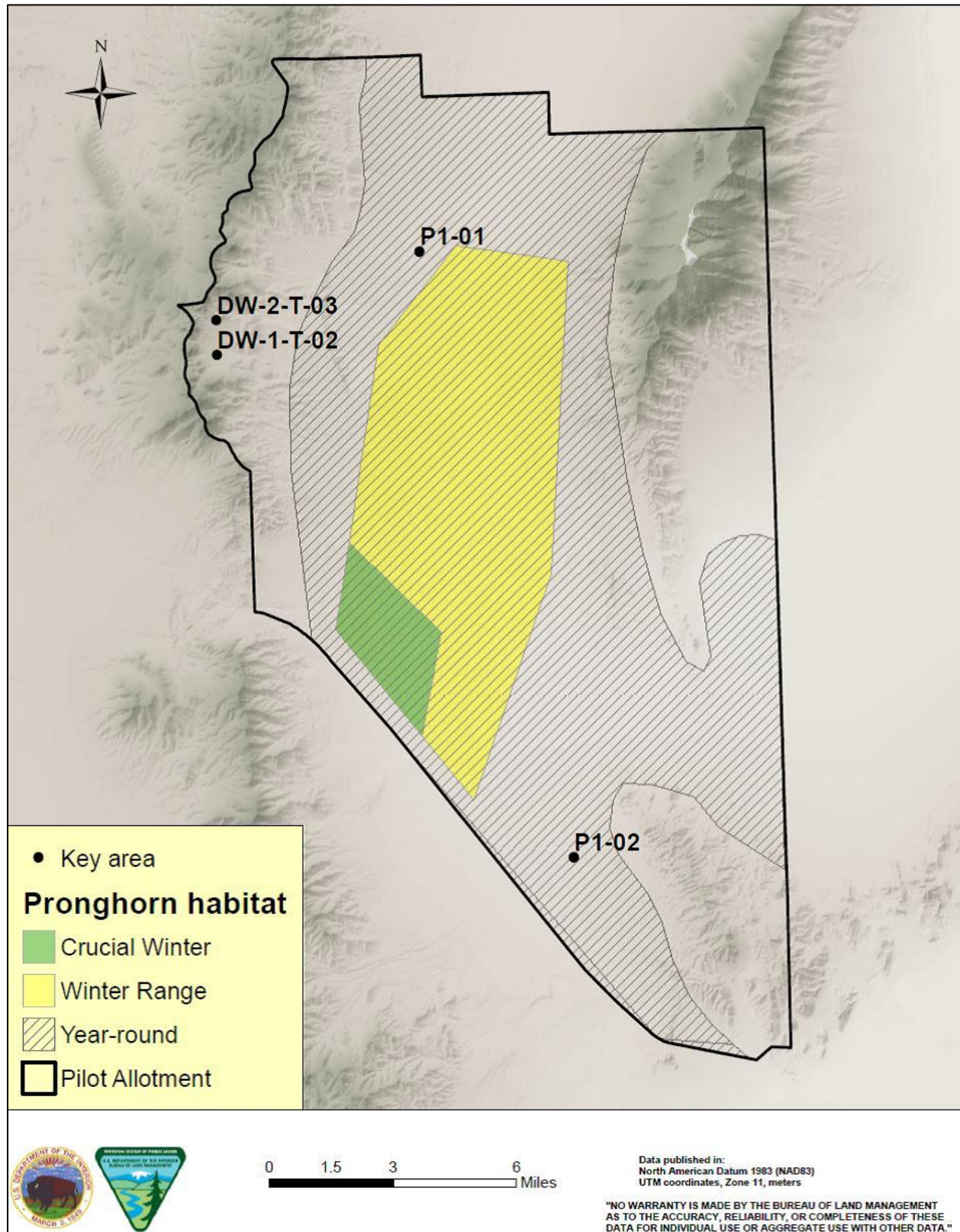
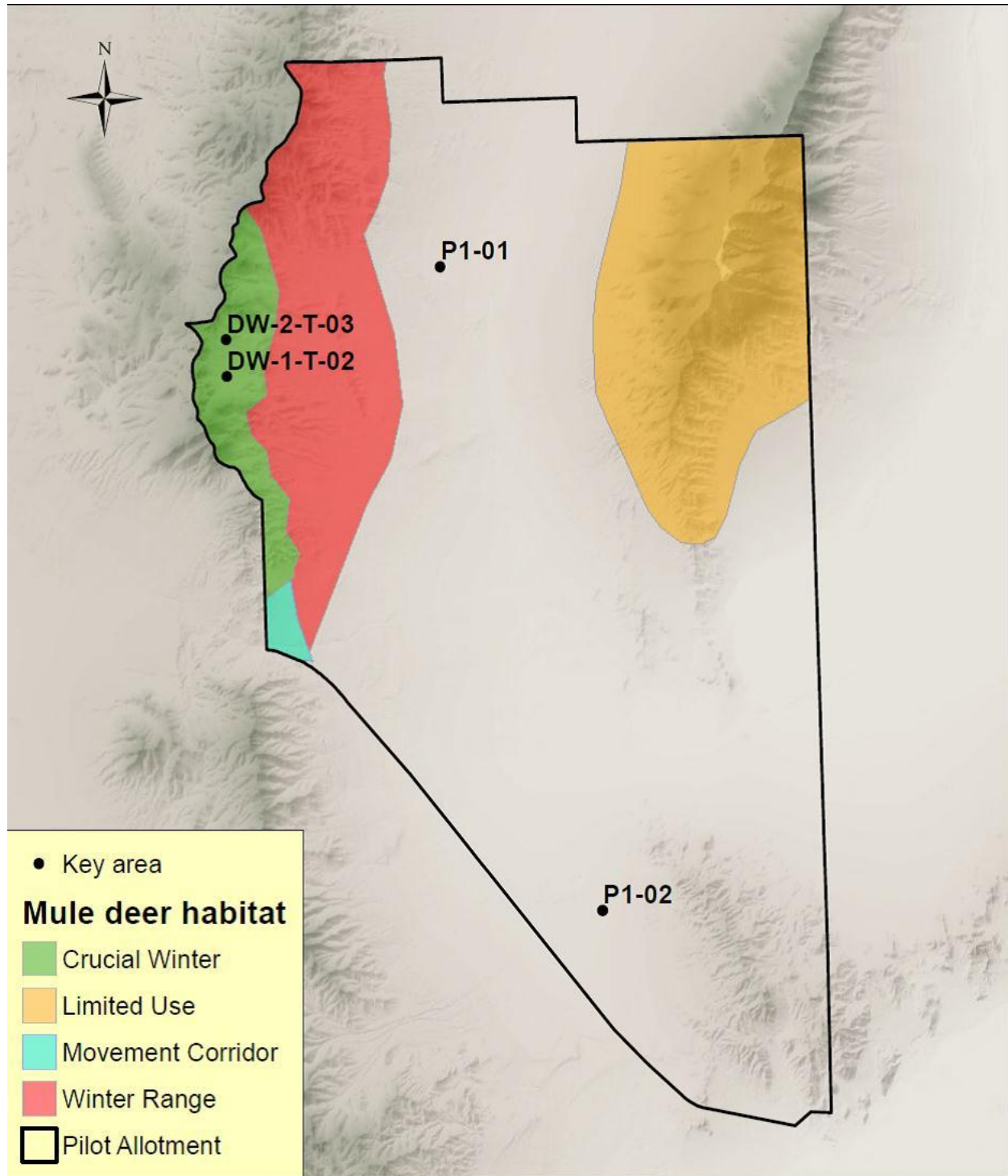


Figure 6 Pronghorn antelope habitat and location of key areas within the Pilot Allotment.

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**Figure 7 Mule deer seasonal habitat within the Pilot Allotment.**



## Pilot Allotment Standards Determination Document

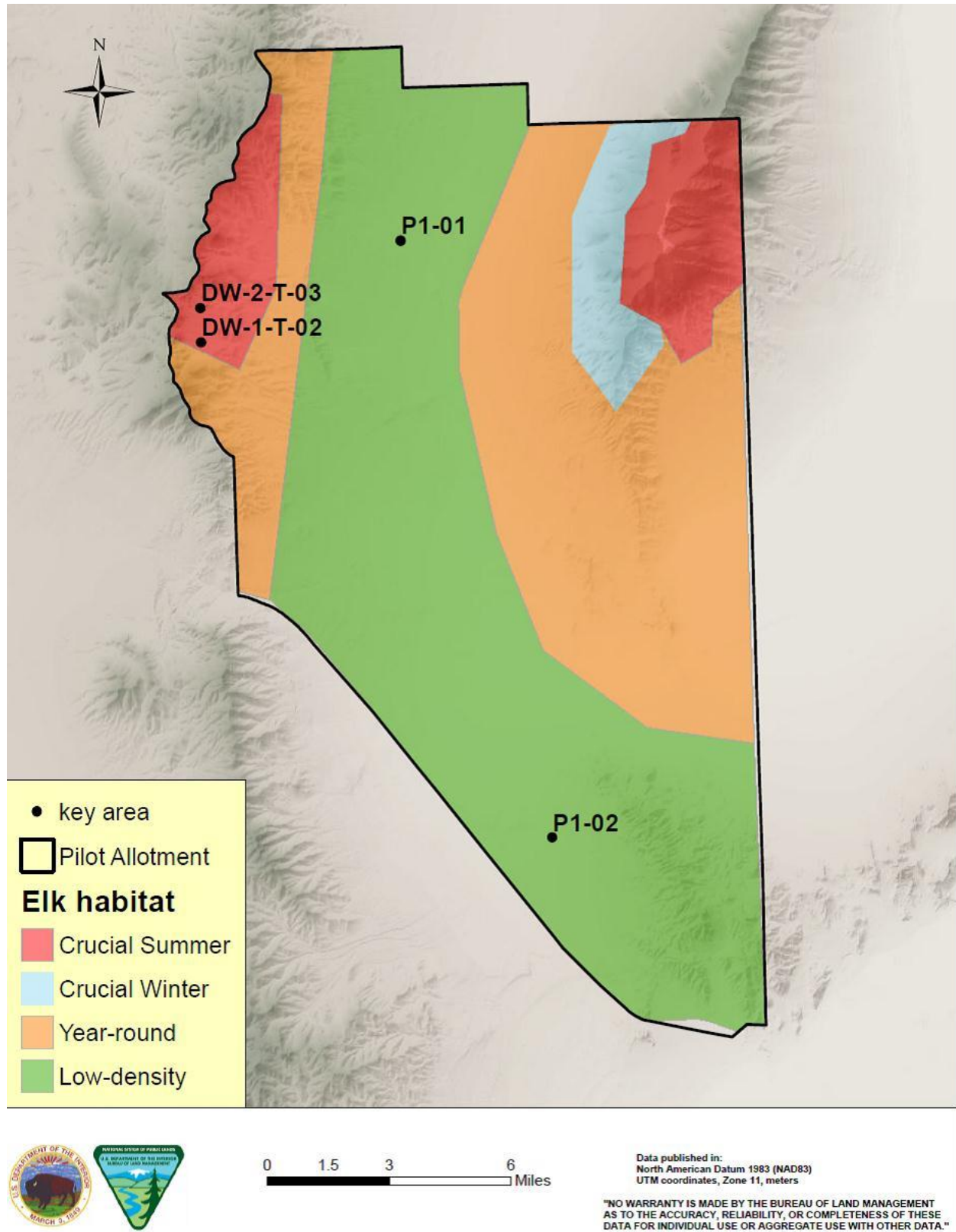
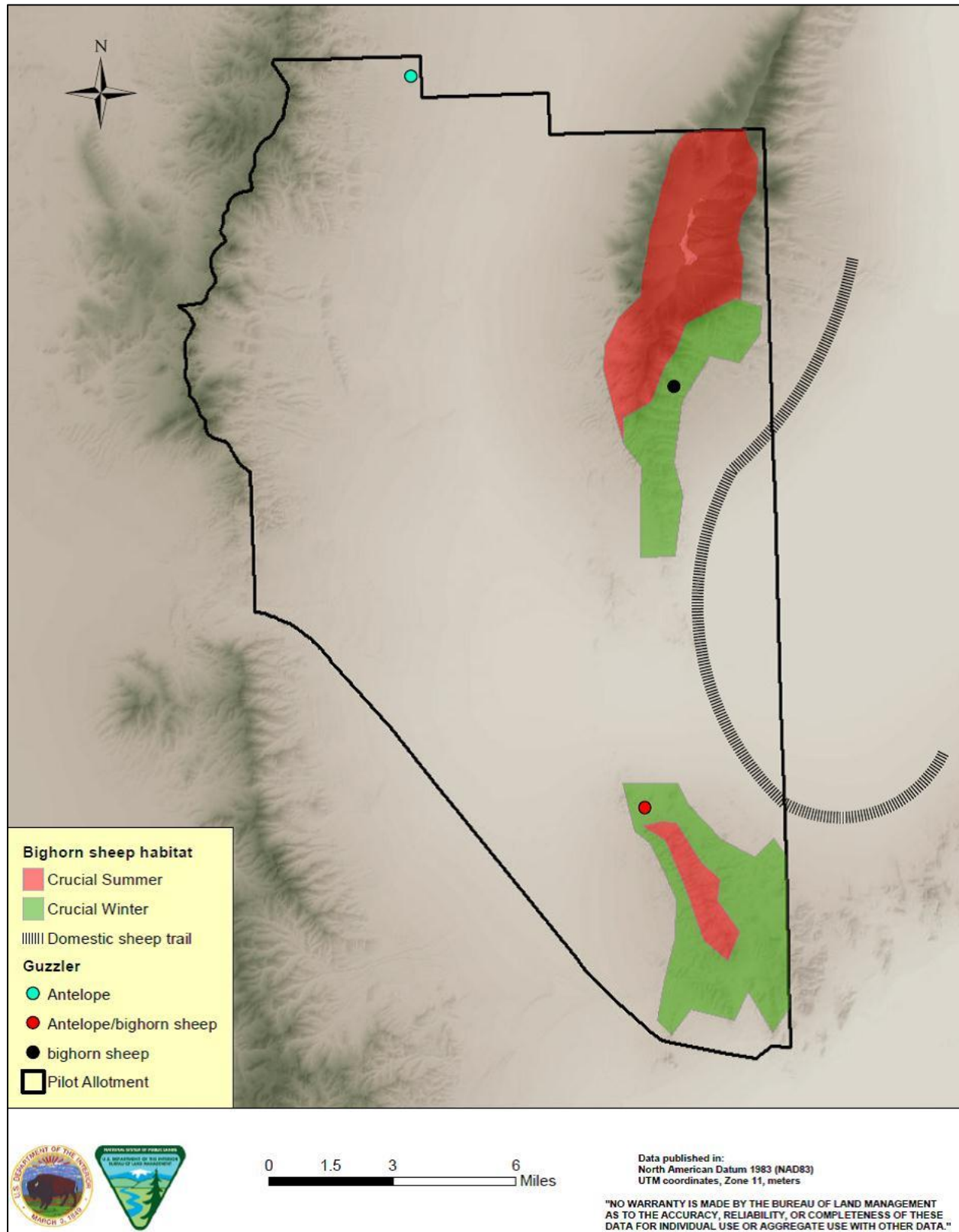


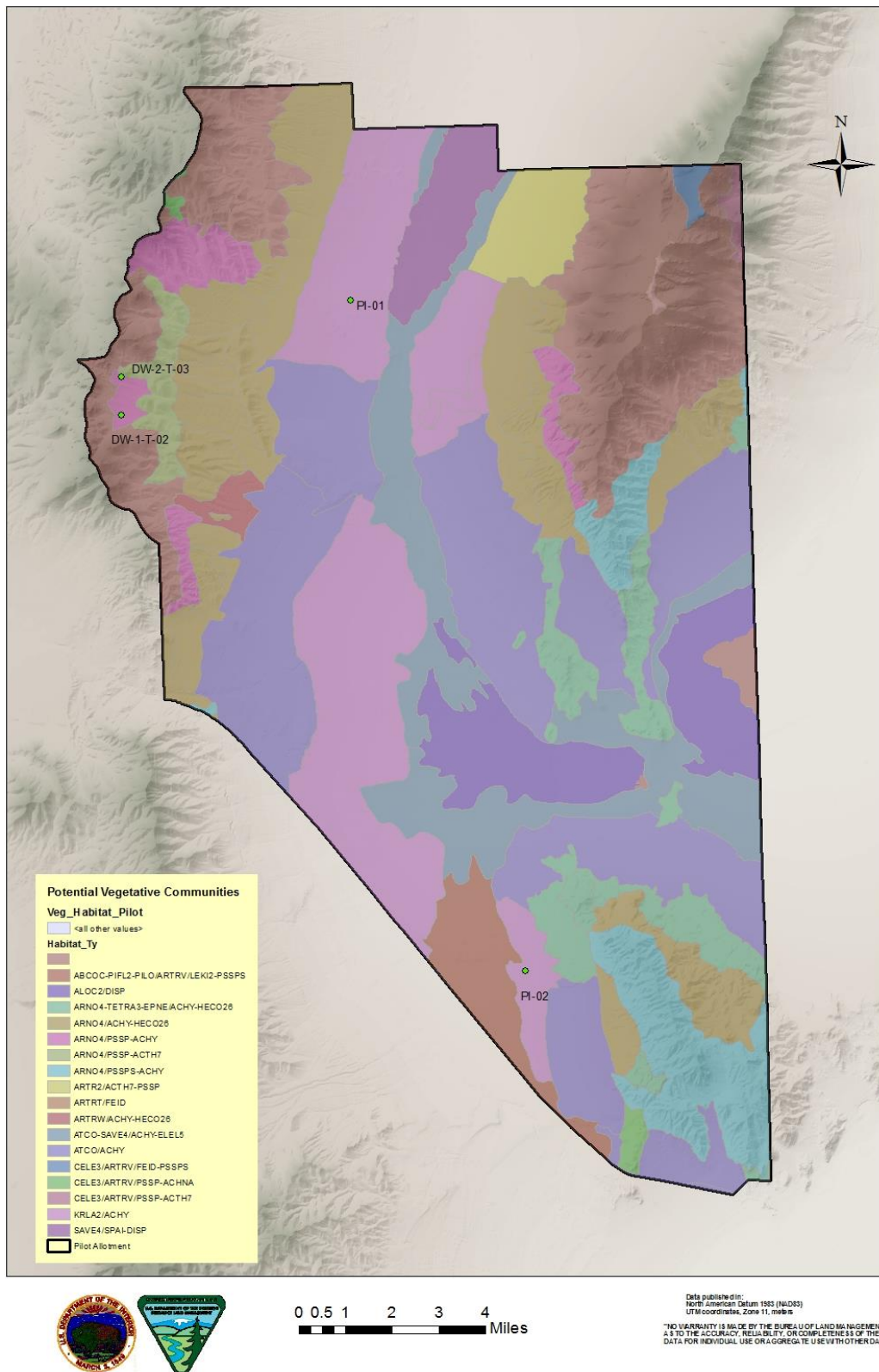
Figure 8 Season elk habitat in the Pilot Allotment.

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**Figure 9 Bighorn sheep habitat, domestic sheep trail and big game guzzlers within the Pilot Allotment.**

# Pilot Allotment Standards Determination Document



**Figure 10 Potential Vegetation Communities in Pilot Allotment.**

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